PRELIMINARY AGREEMENT REGARDING
FORMATION OF A REGIONAL WATER COMMISSION

This Preliminary Agreement (***"Agreement"***) is made as of the date of execution, by and among the VILLAGE OF CHANNAHON, an Illinois municipal corporation, the CITY OF CREST HILL, an Illinois municipal corporation, the CITY OF JOLIET, an Illinois municipal corporation, the VILLAGE OF LEMONT, an Illinois municipal corporation, the VILLAGE OF MINOOKA, an Illinois municipal corporation, the VILLAGE OF ROMEOVILLE, an Illinois municipal corporation, and the VILLAGE OF SHOREWOOD, an Illinois municipal corporation (each a ***"Party"*** and collectively, ***"Parties"***).

In consideration of the recitals and the mutual covenants and agreements set forth in this Agreement, the Parties agree as follows:

ARTICLE I
RECITALS[1]

1.1 Article VII, Section 10 of the 1970 Constitution of the State of Illinois authorizes units of local government to contract or otherwise associate among themselves and with certain other governments "to obtain or share services and to exercise, combine or transfer any power or function, in any manner not prohibited by law or by ordinance" as well as to use their revenues, credit and other resources for such activities.

1.2 The Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq*., (***"IC Act"***) also authorizes the joint use and enjoyment of the powers, privileges, functions and authority of such governments.

1.3 The Illinois General Assembly has approved and the Governor has signed Public Act 102-0684 adopting the Regional Water Commissions Act, codified in 65 ILCS 5/11-135.5-1 *et seq.* (***"RWC Act"***), which authorizes two or more municipalities, at least one of which is located in whole or in part in the County of Cook, Kane, Kendall, Lake, McHenry or Will and has 140,000

[1]All defined terms initially appear in bold and italics and thereafter as capitalized words and phrases throughout this Agreement. They shall have the meanings set forth in the preamble, in Articles I and II, and elsewhere in this Agreement.

or more inhabitants, to acquire, either by purchase or construction, a waterworks system or a common source of supply or water, or both, and to operate jointly and improve and extend a waterworks system or a common source of supply of water.

1.4 The Parties have authority to enter into this intergovernmental agreement pursuant to the RWC Act, the IC Act, Article VII, Section 10 of the 1970 Constitution of the State of Illinois, and other applicable law.

1.5 The Parties are all municipal corporations located in the State of Illinois. The City of Joliet is located in part in the Counties of Kendall and Will, Illinois, and the population of the City of Joliet exceeds 140,000 as of the effective date of the RWC Act.

1.6 In 2015, the Illinois State Water Survey (***"ISWS"***) issued its report entitled "Changing Groundwater Levels in the Sandstone Aquifers of Northern Illinois and Southern Wisconsin: Impacts on Available Water Supply" (***"2015 Report"***), which outlined the long history of its study of available water supplies in northeastern Illinois and shows that, since 2000, the levels of groundwater supply available in the Cambrian-Ordovician Aquifer (deep sandstone) beneath Will, Kane and Kendall Counties and the surrounding areas have continued to decline.

1.7 In 2020, the ISWS issued its report entitled "Analysis of Risk to Sandstone Supply in the Southwestern Suburbs: A Report to the Southwest Water Planning Group (SWPG) (Contract Report 2020-04)," dated September, 2020 (***"2020 Report"***), which quantified the sustainable yield of the deep sandstone aquifer in the southwest suburban region as ranging from 2 to 7 million gallons per day, which is insufficient to support the water needs of communities in the region.

1.8 The existing water usage within Will, Kane, Kendall and Grundy Counties and surrounding areas continues to exceed the available yield from the deep sandstone aquifer and, when combined with the anticipated growth in many communities in the region, the continuing availability of a sufficient supply of groundwater from reliable water sources has become an increasing regional concern as local governments seek to protect the public health, safety, and welfare.

1.9 In 2020, the ISWS issued a report entitled "Recent Trends in Chloride and Total Dissolved Solids in Silurian Wells in the Southwest Water Planning Group Region: Indicators of Groundwater Contamination within the Silurian Dolomite Aquifer (Contract Report 2020-03)," dated June 2020 (***"Shallow Well Report"***), which analyzed the levels of chloride and total dissolved solids in Silurian Dolomite Aquifer wells (shallow wells) and found increasing concentrations that can negatively affect water quality and require additional treatment for the removal of these contaminants.

1.10 In 2020, the Illinois Environmental Protection Agency conducted water quality sampling of all public water supplies for emerging contaminants such as per- and polyfluoroalkyl substances (***"PFAS"***) and the results of sampling show that some wells have detectable levels of PFAS in shallow wells at levels already regulated by environmental authorities in other states, and regulation of PFAS will likely be required by either federal or Illinois environmental authorities.

1.11 Taken together, the 2015 Report, the 2020 Report, the Shallow Well Report and the IEPA's detection of PFAS in shallow wells reveal that long-term water supply needs of communities in the region cannot be reliably and cost-effectively met through the use of groundwater.

1.12 The Parties to this Agreement have determined that they are in need of adequate, safe, reliable and cost-effective supplies of potable water and each has determined that they desire to obtain a common source of water supply, which has been determined to be Lake Michigan water.

1.13 The Parties each have a waterworks system and have each received, or may properly submit an application to receive, a permit for an allocation of Lake Michigan water from the State of Illinois Department of Natural Resources (***"IDNR"***).

1.14 The Parties have determined that it is necessary and in the interest of the public health, safety and welfare to work together to establish a regional water commission (***"Commission"***) pursuant to the requirements of the RWC Act, in order to provide adequate supplies of water on an economical and cost-effective basis for the Members individually,

including without limitation to provide a joint waterworks system and common source of water supply of Lake Michigan water for use as provided in this Agreement.

1.15 In order to establish a Commission, the Parties will be required to adopt an ordinance and approve an intergovernmental agreement (***"IGA"***) providing for the acquisition and operation jointly of a waterworks system and providing for a common source of water supply from Lake Michigan.

1.16 As part of the negotiations between and among the Parties related to the terms of the IGA, and to facilitate the joint acquisition and operation of a waterworks system and common source of water supply, the Parties have reached an understanding regarding certain key terms that would provide a basis for the IGA and creation of a Commission, as described in this Agreement and the attached Exhibits A, B and C, which are incorporated in and made a part of this Agreement by this reference.

ARTICLE II
DEFINITIONS

Whenever used in this Agreement and Exhibit A attached, the following terms shall have the following meanings unless a different meaning is required by the context:

2.1 ***"Basis of Design"*** means the document containing the rationale, principles, criteria, considerations, assumptions, special requirements, and constraints, to be used for the engineering design for the Project Facilities and which establishes a baseline for Program costs, a copy of which is attached as Exhibit C.

2.2 ***"Charter Member"*** **or** ***"Charter Members"*** means one or more Members that are part of the initial group of municipalities that establish the Commission by approving the required intergovernmental agreement and ordinance to establish the Commission.

2.3 ***"Commission"*** **or** ***"Water Commission"*** means the new regional water commission for the southwest suburban region to be created and established pursuant to the RWC Act.

2.4 ***"Commission Costs"*** means those costs described in Section 4.A of the Key Principles in Exhibit A.

2.5 ***"Declared Maximum Day Demand"*** means the amount of Lake Michigan water that a Member of the Water Commission determines to be necessary to provide the Full Water Requirements of the Member's customers at various points in time and which will be established for each Member in the IGA/Water Supply Agreement as may be amended from time to time. A Member's "Declared 2050 Maximum Day Demand" is the amount of Lake Michigan water that a Member determines to be necessary for it to provide the Full Water Requirements to the Member's customers in the year 2050.

2.6 ***"Estimated Buildout Declared Maximum Day Demand"*** means the amount of Lake Michigan water that a Member has determined is the estimated amount to be necessary to meet the Member's Full Water Requirements when the Member is at full community build-out.

2.7 ***"Full Water Requirements"*** means, with respect to a Party/Member, the amount of water necessary from time to time to meet the potable water requirements of all then-current and future customers served by the water system of the Party/Member, whether within or outside the corporate limits of such Party/Member.

2.8 ***"IC Act"*** means the Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq*., as amended from time to time.

2.9 ***"IGA"*** means the required intergovernmental agreement to establish the Commission.

2.10 ***"Mayors' and Managers' Advisory Working Group," "Technical Advisory Working Group,"*** and ***"Coordinating Working Group"*** shall have the meaning described for each in Sections 3.6.A, 3.6.B and 3.6.C, respectively.

2.11 ***"Member"*** **or** ***"Members"*** means one or more municipalities that have approved the required intergovernmental agreement and ordinance to establish the Commission.

2.12 ***"Party"*** **or** ***"Parties"*** means one or more municipalities that have approved this Agreement.

2.13 ***"Project"*** **or** ***"Project Facilities"*** means the Water Commission-constructed and -owned new water supply system to bring Lake Michigan water to the Members, as it may be modified from time to time, and also includes certain items necessary for the delivery of Lake Michigan water which will be designed and constructed by the Water Commission and for which the cost of construction will be paid by the City of Chicago and which will be owned by the City of Chicago pursuant to the water supply agreement with the City of Chicago.

2.14 ***"Program"*** means all activities necessary for design, construction, start-up and commissioning of the Project.

2.15 ***"RWC Act"*** means Public Act 102-0684 adopting the Regional Water Commissions Act, codified in 65 ILCS 5/11-135.5-1 *et seq.*

2.16 ***"Stateville Prison"*** means the State of Illinois' Stateville Correctional Facility and related facilities located in the City of Crest Hill, Illinois.

2.17 ***"Targeted Water Delivery Date"*** means May 1, 2030 unless otherwise mutually agreed by the Parties/Members.

2.18 ***"Water Commission Formation Fund"*** means the fund established pursuant to Section 3.10 of this Agreement.

2.19 ***"Water Supply Agreement"*** or ***"WSA"*** means the water supply agreement between the Commission and its Members, except where otherwise expressly provided.

ARTICLE III
COMMITMENT TO CONTINUE NEGOTIATIONS TO ESTABLISH A REGIONAL WATER COMMISSION

3.1 Continued Discussions. The Parties hereby acknowledge and agree that they will enter into additional discussions regarding the details of the conceptual terms and conditions of this Agreement for inclusion in an IGA to create a Regional Water Commission and for the development of a Water Supply Agreement between the Regional Water Commission and its Members.

3.2 Key Principles and Agreements. The Parties agree to negotiate and enter into the final terms of the IGA/Water Supply Agreement[2] consistent with the terms of this Agreement and the "Key Principles for Water Commission Formation" that are included in Exhibit A to this Agreement, unless otherwise mutually agreed by the Parties. The final terms of the IGA/Water Supply Agreement will include language finalizing and setting out in detail the agreed-upon conceptual terms contained in this Agreement and Exhibit A.

3.3 Additional Provisions. The Parties agree that the IGA and Water Supply Agreement will include additional provisions that are not specifically mentioned in this Agreement but that are necessary to complete the IGA and Water Supply Agreement that will establish the ongoing relationship of the Parties regarding the acquisition and operation jointly of a waterworks system and a common source of supply of Lake Michigan water.

3.4 Deadline for IGA. Each Party acknowledges and agrees that, subject to completion of negotiations and obtaining all requisite authority for execution, said Party intends to adopt the necessary ordinance and enter into the IGA no later than April 30, 2023, unless the Parties mutually agree to a different date, and that each Party will work in good faith to achieve such result.

3.5 Key Documents for Regional Water Commission. The Parties agree that at least the following key documents will be required as part of the process of forming the new Regional Water Commission:

A. Lake Michigan water allocation permit from IDNR, to be obtained and maintained by each Party as provided in Section 3.8.

B. IGA between and among the Parties and ordinance, as provided in Articles III and IV, to establish the Commission as a legal entity for the joint exercise of powers.

[2] References to including or addressing a topic or item in the "IGA/Water Supply Agreement" is an indicator that the topic or item could be included in the IGA, the Water Supply Agreement or in both documents. These can be clarified as the Parties continue negotiations pursuant to this Agreement. In addition, some topics and items may instead be included in the Program management agreement between the Commission and Joliet. (See Section 3.5.G)

C. Commission by-laws/organization ordinance, to establish key procedures and requirements for Commission operation, and to be adopted at the first or second meeting of the board of commissioners.

D. Water supply agreement between City of Chicago and City of Joliet, to be assigned to the Commission and will provide a source of supply of Lake Michigan water to the Commission's Members. This assignment is to be approved by the Commission promptly after the Commission is established.

E. Water Supply Agreement between the Commission and the Members, to establish the terms for the Commission's sale of water to the Members. This Water Supply Agreement is to be approved by the Commission promptly after the Commission is established.

F. Program management agreement between the Commission and City of Joliet, to establish terms for management of the implementation of the Commission's water supply system. This agreement is to be approved by the Commission promptly after the Commission is established.

3.6 Meetings and Working Groups. The Parties will meet on a regular basis as mutually agreed during the term of this Agreement to consider various aspects of the Program and the Project Facilities. The Parties agree that certain matters should be allocated to various informal working groups consisting of officials or personnel, as the case may be, of various Parties, including the following working groups. Each Party shall notify the Executive Director of the Will County Governmental League (or such other entity or person as may be designated by the Coordinating Working Group from time to time) in writing of its designees and representatives for each working group and of any changes in such personnel from time to time:

A. Mayors' and Managers' Advisory Working Group. An advisory group comprised of up to two representatives from each of the Parties, one of which shall be the Village President or Mayor, or another member of the corporate authorities of the Party, and one of which shall be the municipal manager or administrator, or another municipal staff member with management responsibilities, of the Party. Each Party may designate an alternate representative for each of

its two representatives. The representatives and the alternates shall be appointed by the Village President or Mayor with approval of the corporate authorities. The Mayors' and Managers' Working Group is established for the purposes of communication and coordination on matters of mutual concern, and to provide policy direction regarding the Program and the Project.

B. Technical Advisory Working Group. An advisory body comprised of one representative from each of the Parties, who shall be a designee of the Village President or Mayor. Each Party may designate an alternate representative to this Working Group. Representatives and alternate representatives shall be full-time employees of the Parties with responsibilities relating to the Party's water system. Each Party may send additional staff members or consultants to the sessions of this Working Group as necessary for the topics under discussion. This Working Group shall consider all aspects of the Program and the design, construction and operational aspects of the Project Facilities, discuss modifications to the Basis of Design and review those modifications requiring approval pursuant to Subsection C below, monitor the project management by the City of Joliet, review and make recommendations regarding expenses paid from the Water Commission Formation Fund, and report on a periodic basis to the Mayors' and Managers' Working Group.

C. Coordinating Working Group. A group comprised of the Mayors' and Managers' Advisory Working Group and convened as the Coordinating Working Group only for the following purposes: Review of periodic reports provided by the City of Joliet pertaining to budget and financing issues for the Project Facilities; review and approval of modifications to the Basis of Design that increase the cost of the Project or will delay the Project Schedule to a date after the Targeted Water Delivery Date; input on and review of the allocation and expenditure of the Water Commission Formation Fund; and approval of expenditures for such services.

3.7 Water Supply Needs Declarations.

A. Each Party to this Agreement agrees to approve and make a preliminary declaration of the amounts of both its Declared 2050 Maximum Day Demand and its Estimated Buildout Declared Maximum Day Demand in a resolution approved by its corporate authorities in

a form consistent with Exhibit B and at the time required in Section 4.1 of this Agreement, and which amounts will be binding on the Party for the purposes of this Agreement.

B. The Parties agree that a final declaration of the amount of each Party's/Member's Declared 2050 Maximum Day Demand will be included in the IGA/Water Supply Agreement and shall be within 10% of the preliminary declaration amount established pursuant to Section 3.7.A.

C. The Parties agree that each Member will provide, for inclusion in the IGA/Water Supply Agreement, an updated declaration of the Member's Estimated Buildout Declared Maximum Day Demand, which will be a good faith estimate based on information available at the time of entering into the IGA/Water Supply Agreement, such as the Member's comprehensive plan and other planning materials and projections, and will be used for planning purposes in connection with the current and future design of Project Facilities and will not be binding on the Member or the Water Commission.

D. The Parties agree that if the City of Crest Hill enters into this Agreement, Crest Hill will separately itemize the portion of its preliminary declaration of both its Declared 2050 Maximum Demand and Estimated Buildout Declared Maximum Day Demand necessary for providing Lake Michigan water to Stateville Prison. If Crest Hill enters into the IGA/Water Supply Agreement, the Parties agree that Crest Hill will separately itemize the portion of its final declaration of both its Declared 2050 Maximum Demand and Estimated Buildout Declared Maximum Day Demand necessary for providing Lake Michigan water to Stateville Prison.

3.8 Lake Michigan Water Allocations. Each Party agrees that it has submitted or will submit a complete application for its own Lake Michigan water allocation permit to the Illinois Department of Natural Resources no later than March 31, 2022 and will diligently work to complete the allocation process and obtain an allocation permit. This work includes all available opportunities for appeals of a permit denial in courts of competent jurisdiction and any other opportunities for review of a denial of the permit. Parties that, as of the date of this Agreement, have obtained such a permit sufficient for its preliminary declaration of its Declared 2050 Maximum Day Demand are not required to submit an additional application.

3.9 Commitment to Regional Water Commission as Party's Water Source. Each Party agrees that it will exclusively pursue Lake Michigan water from the Water Commission to provide the Party's Full Water Requirements, except to the extent that an exception to this requirement will be authorized in the IGA/Water Supply Agreement as described in Section 5.A of Exhibit A.

3.10 Costs of Water Commission Formation.

A. In order to fund Water Commission formation administrative costs, each Party agrees to pay $110,000 within six months after execution of this Agreement.

B. If the IGA to form the Water Commission is not approved and in effect by April 1, 2023, each Party agrees to make an additional payment of $110,000 not later than July 1, 2023 to continue to fund ongoing Water Commission formation administrative costs.

C. Payments will be held in a separate fund called the Water Commission Formation Fund, which will be held by a Party designated by mutual agreement of the Parties. If the designated Party notifies the other Parties that it no longer wishes to serve in this role or does not enter into the IGA, the funds in the Water Commission Formation Fund will be transferred to another designated Party/Member selected as mutually agreed by the Parties/Members. Expenses for Water Commission formation administrative costs will be approved by the Coordinating Working Group and paid from this Water Commission Formation Fund.

D. To the extent that any funds remain after the termination of this Agreement and the payment of all costs related pursuant to this Agreement, the Party holding the Water Commission Formation Fund pursuant to this Section shall either (i) deliver any remaining funds to the Commission if one has been established or (ii) if a Commission has not been established, return such remaining funds to the then-current Parties in the same proportion as their respective initial contributions under this Section. The designated Party shall deliver such remaining funds within 90 days after the termination of this Agreement, unless otherwise agreed by the Parties.

3.11 Demonstration of Financial Ability. Each Member must demonstrate financial ability to fund required improvements within its water system as well as its share of the

Commission Costs by submitting a financial plan and supporting documentation prior to execution of the IGA.

A. Parties will submit their financial plans and supporting documentation by June 15, 2022.

B. The financial plan will be in the form of a 20-year proforma. Supporting documentation will include at least the following: the Party's current Comprehensive Annual Financial Report (CAFR); the Party's current budget; the Party's capital improvement plan for all capital items, including all Project-related internal improvements; and all current bond ratings of the Party (if available).

C. Reviews of financial plans and supporting documentation will be completed by a team that may include finance directors, financial advisors, bond counsel, underwriters, and other financial consultants. Results of the reviews will be reported to Parties to this Agreement for review and analysis in connection with the financial strategy for the Program and Project Facilities.

D. The Parties will meet and discuss the results of the financial reviews provided pursuant to Subsection C above. In the event the Parties conclude that a Party has failed to demonstrate adequate financial capacity to fund required improvements within its water system as well as its share of the Commission Costs, the Parties agree to notify such a Party of this conclusion and that the Parties will not enter into an IGA with that Party. In such an instance the Party failing to demonstrate adequate financial capacity will be allowed to terminate its participation in this Agreement, and will be treated as the terminating Party and will be required to pay the costs required of a terminating Party as described in Section 4.3.A.v of this Agreement.

ARTICLE IV
AGREEMENT TERM AND TERMINATION

4.1. Approval and Effective Date. This Agreement will be effective between and among those Parties listed in the first paragraph on page 1 of this Agreement who take the following actions not later than February 28, 2022:

A. The Party's corporate authorities adopt a resolution approving this Agreement establishing the Party's preliminary declaration of the amounts of both its Declared 2050 Maximum Day Demand and Estimated Buildout Declared Maximum Day Demand pursuant to and as described in Section 3.7 of this Agreement; and

B. The Party's authorized officials execute a counterpart of this Agreement.

In addition, the Party must submit a certified copy of the resolution and the executed counterpart of this Agreement to the Executive Director of the Will County Governmental League not more than seven days after the Party's actions pursuant to Subsections A and B of this Section.

4.2. Additional Parties.

A. In the event that a municipality listed in the first paragraph on page 1 of this Agreement does not take the actions specified in Section 4.1.A and B by the due date required by Section 4.1 and submit the required materials within the time specified in Section 4.1, such a municipality may submit to the Working Groups a request for waiver of compliance with the due date and time for submission. Any such request for a waiver of compliance must include all of the items required by Section 4.1 along with an explanation of the reason for the delay, and must be submitted no later than 30 days after the due date and the time for submission specified in Section 4.1. Such a request will be reviewed by the Technical Advisory Working Group for recommendation to the Mayors' and Managers' Advisory Working Group. If the reasons for the failure to comply are found to be reasonable by the Mayors' and Managers' Advisory Working Group, then the Mayors' and Managers' Advisory Group will act as the Coordinating Working Group to approve the request.

B. Any request to become a Party to this Agreement and a Member of the Commission (i) by a municipality not listed in the first paragraph on page 1 of this Agreement or (ii) by a municipality listed in the first paragraph on page 1 of this Agreement that is submitted after the time for requesting a waiver under Subsection A of this Section has expired, shall be reviewed by the Technical Advisory Working Group for recommendation to the Mayors' and

Managers' Advisory Working Group and an amendment to this Agreement to be approved by each Party's Board/Council and the requesting municipality.

C. Any amendment pursuant to Subsection B of this Section shall include the requesting municipality's agreement to pay at least the following costs: (i) a proportionate share of costs and expenses incurred under this Agreement prior to the requesting municipality becoming a Party, and (ii) the costs of all alterations to the design of the Project Facilities reasonably due to and demonstrably caused by the requesting municipality's addition as a Party to this Agreement, including (a) all re-engineering costs to modify the design of the improvements to include the requesting municipality's capacity as part of the Project Facilities, including but not limited to optimizing transmission main sizing and routing, pump station capacity (Low Service Pump Station, High Service Pump Station, Intermediate Pump Station), subregional transmission main and pump station design, and (b) land acquisition and permitting costs, if any land or permitting is no longer required or must be modified due to the requesting municipality's addition as a Party. The costs will be determined based on the actual costs expended in the course of engineering, land acquisition and permitting for the Project.

4.3. Termination of this Agreement.

A. Limited Termination Rights. A Party may terminate its participation in this Agreement and withdraw from this Agreement for only the following reasons:

i. Denial of a Party's application for Lake Michigan Allocation permit by Illinois Department of Natural Resources and failure by a Party to obtain a Lake Michigan Allocation permit following completion of all available appeals and other opportunities for reconsideration.

ii. Receipt by a Party of a notice of failure to demonstrate adequate financial capacity under Section 3.11 of this Agreement.

iii. Termination by the City of Crest Hill if, upon consultation between Crest Hill and State of Illinois, it becomes apparent that the Stateville Prison will close.

iv. Termination by a Party prior to entering into the IGA if a force majeure event results in a loss of 25% or more of the preliminary declaration amount of that Party's Declared 2050 Maximum Day Demand from the Party's existing customers as of the date of this Agreement.

v. Termination for any permitted reason other than (iii) above will require payment by the terminating Party of the costs of all alterations to the design of the Project Facilities reasonably due to and demonstrably caused by the Party's termination, including (a) all re-engineering costs to modify the design of the improvements to remove the terminating Party's capacity from the Project Facilities, including but not limited to optimizing transmission main sizing and routing, pump station capacity (Low Service Pump Station, High Service Pump Station, Intermediate Pump Station), subregional transmission main and pump station design, and (b) land acquisition and permitting costs, if any land or permitting is no longer required due to the Party's termination. The costs will be determined based on the actual costs expended in the course of engineering, land acquisition and permitting for the Project.

These termination rights are limited to and only apply to this Agreement and will not carry forward to the IGA unless expressly included in the IGA.

B. Termination—No IGA. This Agreement shall automatically terminate in the event that the Parties do not enter into an IGA by October 1, 2023, unless the Parties agree to a different date.

4.4. Future IGA. If two or more but less than all of the Parties approve and enter into an IGA and approve the required ordinance as of the date required by Section 3.4, this Agreement will be superseded by the IGA and shall cease to be effective as of the date that the IGA is effective. The IGA will include a process for requesting and granting a waiver of the requirement to approve the IGA and the required ordinance by the date required in Section 3.4; the only basis for a waiver of that date will be if a Party's application for an allocation of Lake Michigan water

has not been approved. As a condition of the waiver, the Party receiving such a waiver may be required to pay all or a portion of the costs, if any, that the Commission incurs due to the Party's delay in approving the IGA and required ordinance.

4.5. Failure to Enter into IGA/Water Supply Agreement. If a Party to this Agreement fails to approve and enter into the IGA and approve the necessary ordinance to establish the Commission by the date required by Section 3.4 of this Agreement and does not obtain a waiver as described in Section 4.4, such a Party shall be treated as a terminating Party and will be required to pay the costs required of a terminating Party as described in Section 4.3.A.v of this Agreement.

ARTICLE V
LEGAL RELATIONSHIPS AND REQUIREMENTS

5.1 Execution; Counterparts**.** This Agreement may be executed in multiple identical counterparts, and all of said counterparts will, individually and taken together, constitute one and the same Agreement. Each of the Parties represents that the persons executing this Agreement on behalf of such Party is duly authorized to do so.

5.2 Entire Agreement. There are no representations, covenants, promises, or obligations not contained in this Agreement that form any part of this Agreement or upon which any of the Parties is relying in entering into this Agreement.

5.3 Amendment. This Agreement may be amended only by written agreement of all Parties. An amendment is effective only when authorized by ordinances adopted by each Party's corporate authorities.

5.4 Enforcement. The Parties shall have the right to enforce, in law or equity, this Agreement. The Parties agree to meet and confer to discuss any disputes over the terms of this Agreement prior to filing any action for enforcement of this Agreement.

5.5 Severability. If any part, term, or provision of this Agreement is held invalid by a court of competent jurisdiction for any reason, the remainder of this Agreement shall be

interpreted, applied and enforced as to achieve, as near as may be, the purpose and intent of this Agreement to the maximum extent possible.

5.6 Regulatory Bodies. This Agreement will be subject to all valid rules, regulations, and laws applicable hereto passed and promulgated by the United States of America, the State of Illinois, or any other governmental body or agency having lawful jurisdiction, or any authorized representative or agent of any of them; provided, however, that this Section will not be construed as waiving the right of any Party to challenge the validity of any such rules, regulations, or laws on any basis, including the impairment of this Agreement.

5.7 Governing Law. This Agreement shall be governed by, and enforced in accordance with, the internal laws, but not the conflicts of laws rules, of the State of Illinois.

5.8 Non-Assignability. The Parties agree that this Agreement shall not be assigned or transferred by any Party without the prior written consent of the other Parties.

5.9 No Third-Party Beneficiaries. Nothing in this Agreement shall create, or be construed to create, any third-party beneficiary rights.

5.10 Notice. All notices and other communications in connection with this Agreement shall be in writing and will be deemed delivered to the addressee thereof when delivered in person, by a reputable overnight courier, or by messenger at the address set forth below, or three business days after deposit thereof in any main or branch United States post office, certified or registered mail, return receipt requested, postage prepaid, properly addressed to the Parties, respectively, at each Party's contact information as provided with its signature. A Party may change its contact information by giving notice to all other Parties pursuant to this Section.

[SIGNATURES ARE ON FOLLOWING PAGES]

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date written below.

Village of Channahon, an Illinois municipal corporation

By: /s/ M. Moorman-Schumacher

Its: Village President

Date: February 7, 2022

ATTEST:

By: /s/ Kristin A. Hall

Its: Village Clerk

Contact Party for the Village of Channahon:

Name: Thomas A. Durkin

Address: 24555 S. Navajo Drive

Channahon, IL 60410

Telephone: (815) 467-6644

Email: tdurkin@channahon.org

City of Crest Hill, an Illinois municipal corporation

By: /s/ Raymond R. Soliman

Its: Mayor

Date: January 17, 2022

ATTEST:

By: /s/ Christine Vershay-Hall

Its: City Clerk

Contact Party for the City of Crest Hill:

Name: City Administrator

Address: 1610 Plainfield Road

Crest Hill, IL 60403

Telephone: (815) 741-5100

Email: jmarino@cityofcresthill.com

City of Joliet, an Illinois municipal corporation

By: /s/ Robert O'Dekirk

Its: Mayor

Date: February 7, 2022

ATTEST:

By: /s/ Christa M. Desiderio

Its: City Clerk

Contact Party for the City of Joliet:

Name: Allison Swisher

Address: 150 W. Jefferson

Joliet, IL 60432

Telephone: (815) 724-4222

Email: aswisher@joliet.gov

Village of Lemont, an Illinois municipal corporation

By: _____

Its: _____

Date: _____

ATTEST:

By: _____

Its: _____

Contact Party for the Village of Lemont:

Name: _____

Address: _____

_____

Telephone: _____

Email: _____

Village of Minooka, an Illinois municipal corporation

By: /s/ Frederic Offerman

Its: Village President

Date: January 27, 2022

ATTEST:

By: /s/ Orsola Evola

Its: Village Clerk

Contact Party for the Village of Minooka:

Name: Dan Duffy
Address: 121 E. McEvilly Rd.
Minooka, IL 60447
Telephone: (815) 467-2151
Email: dan.duffy@minooka.com

Village of Romeoville, an Illinois municipal corporation

By: /s/ John D. Noak

Its: Mayor

Date: February 22, 2022

ATTEST:

By: /s/ Dr. Bernice E. Holloway

Its: Village Clerk

Contact Party for the Village of Romeoville:

Name: Dawn Caldwell
Address: 1050 W. Romeo Rd.
Romeoville, IL 60446
Telephone: (815) 482-1640
Email: dcaldwell@romeoville.org

Village of Shorewood, an Illinois municipal corporation

By: /s/ C. DeBold

Its: President

Date: January 25, 2022

ATTEST:

By: /s/ Lona Jakaitis

Its: Village Clerk

Contact Party for the Village of Shorewood:

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EXHIBIT A

REGIONAL WATER COMMISSION

KEY PRINCIPLES FOR WATER COMMISSION FORMATION

1. DEFINITIONS AND RULES OF INTERPRETATION.

A. Capitalized terms used in this Exhibit A shall have the meanings contained in the Agreement to which this Exhibit is attached, unless otherwise specifically provided.

B. References to including or addressing a topic or item in the "IGA/Water Supply Agreement" is an indicator that the topic or item will be included in the IGA, the Water Supply Agreement or in both documents. These issues can be clarified as the Parties continue to work through the drafting process.

2. GOVERNANCE TERMS.

A. The Commission will be governed by a Board of Commissioners made up of one member of the corporate authorities from each Member who will serve as a commissioner. Each Member may designate one member of its corporate authorities to act as its alternate commissioner in the absence or inability of the commissioner. Each commissioner has one vote. Appointments will be in the manner provided in the RWC Act.

B. A Technical Advisory Committee will be established to advise the Board of Commissioners, and will be made up of one municipal employee from each Member. Each Member may designate another municipal employee to serve as its alternate. Appointments will be made in the manner provided in the RWC Act. The qualifications to serve on the Committee and the Committee's duties and functions will be provided in the IGA.

C. The Board of Commissioners may establish other committees from time to time as provided in the RWC Act.

D. The Commission will accept assignment of the Water Supply Agreement between the City of Joliet and the City of Chicago.

E. The following actions will require unanimous vote of the Board of Commissioners and approval (need not be by unanimous vote) of each Member's Board/Council:

i. The addition of new Members;

ii. The withdrawal of Members;

iii. The addition of a non-Member wholesale or retail customer of the Commission, other than for purposes of emergency interconnection and emergency water supply;

iv. Amendment of the IGA establishing the Commission;

v. Amendment or renewal of the water supply agreement with the City of Chicago;

vi. Termination of the Program or Project; and

vii. Dissolution of Commission.

F. The following actions will require unanimous vote of the Board of Commissioners:

i. Approval of a growth-related charge;

ii. Modifications to the Basis of Design that increase Program costs (other than modifications due to requirements of applicable laws, rules or regulations or a written agreement necessary for the implementation of the Project, such as easements or intergovernmental agreements, that were not anticipated at the time of approval of the Basis of Design in Exhibit C and the appropriate vote for which will be determined along with other items pursuant to Section 2.H), alter the design criteria in a manner that decreases Project reliability or quality, or extend the schedule beyond the Targeted Water Delivery Date;

iii. Establishing a Targeted Water Delivery Date that is later than the then-current Targeted Water Delivery Date; and

iv. Initiation or settlement of litigation to which the Commission is a party and involving matters in excess of $500,000.

G. In the event that a commissioner and that commissioner's alternate fail to attend a Board of Commissioners' meeting where a vote on a matter which requires a unanimous or supermajority vote of the Board of Commissioners within the time specified in the IGA (which shall not be less than 90 days), or fail to vote on a matter which requires a unanimous or supermajority vote of the Board of Commissioners within the time specified in the IGA, the commissioner shall be deemed to have voted in favor of the matter. In the event that a Member Board/Council fails to act on a matter requiring approval of all Member Boards/Councils within the time specified in the IGA (which shall not be less than 90 days), the Member Board/Council shall be deemed to have approved the matter. Neither failure of a commissioner and that commissioner's alternate to attend or vote nor failure of a Member Board/Council to act within the time required will be allowed to prevent a unanimous vote.

H. The levels of voting (supermajority and unanimous) specified in Sections 2.E and F do not address all matters on which levels of voting (simple majority, supermajority, unanimous) will be required for the operation of the Commission. Levels of voting for all matters not specified in Sections 2.E and F will be established in the IGA, along with instances in

which consent or approval of Member Boards/Councils will be required. The levels of voting will depend on final Commission membership.

I. Water Sale and Resale: The IGA/Water Supply Agreement will include a list of each Party's then-current water customers in each of the following categories that: (i) purchase water from the Party on a wholesale basis (for re-sale), and (ii) are located outside the Party's municipal/corporate limits and purchase water from the Party on a retail basis (for the customer's own use), and (iii) have emergency interconnection agreements or other similar arrangements with another water supplier. Water sales and resales shall be governed by the following:

i. Members can sell water at retail within their municipal/corporate limits.

ii. A Member can sell water at retail outside its municipal/corporate limits, as long as the amount of water resold is within the Member's Declared Maximum Day Demand.

iii. A Member cannot sell water within (a) another Member's municipal/corporate limits; (b) areas subject to a then-current boundary agreement in which another Member is the designated Party; or (c) areas within another Member's planning area as established pursuant to Division 12 of Article 11 of the Illinois Municipal Code, 65 ILCS 5/11-12-1 *et seq.*, without approval of that other Member. After a municipality has annexed territory, that annexed territory can no longer be considered part of another municipality's planning area, even though that territory may be shown on planning maps and documents of another municipality as part of its planning areas.

iv. A Member can re-sell water to wholesale customers within or outside its municipal/corporate limits, as long as the amount of water resold is within the Member's Declared Maximum Day Demand. The Parties agree to discuss whether to include a process by which the Member proposing to re-sell water to previously unidentified wholesale customers would advise other Members of an intent to re-sell water in excess of a threshold amount prior to commencing such re-selling.

v. Non-Member customers cannot resell water to any party or entity that will be a wholesale customer of the non-Member.

vi. Provisions for the process by which potential future sale of water by the Commission to non-Members would be allowed will be established in the IGA, which shall include that the Commission cannot sell water (a) to residents or retail customers of any Member; (b) within a Member's municipal/corporate limits (other than pursuant to the Water Supply Agreement); or (c) within areas subject to a

then-current boundary agreement in which a Member is the designated Party; or (d) within areas within a Member's planning area as established pursuant to Division 12 of Article 11 of the Illinois Municipal Code, 65 ILCS 5/11-12-1 *et seq.,* without approval of that Member.

3. PROGRAM AND PROJECT SCHEDULE, DEVELOPMENT AND MANAGEMENT TERMS.

A. The Program will be implemented pursuant to a schedule for commissioning and start-up of the Project by the Targeted Water Delivery Date.

B. The Project Facilities will be designed in a manner consistent with the Basis of Design in Exhibit C. The Basis of Design establishes a baseline of costs for the Program. A summary of the baseline of costs in Exhibit C follows:

Regional Demand Scenario	Total of 2050 Declared Maximum Day Demand (MGD)	Total RWC Capital Costs (2020 Dollars)	
		$	$ per MGD
Scenario #1 - Joliet & Shorewood	32.54	$ 582,164,476	$ 17,890,734
Scenario #2 - Joliet, Crest Hill & Shorewood	36.72	$ 570,092,375	$ 15,525,391
Scenario #3 - Joliet, Crest Hill, Shorewood & Minooka	41.26	$ 614,695,052	$ 14,898,087
Scenario #4 - Joliet, Romeoville & Shorewood	40.79	$ 616,237,143	$ 15,107,554
Scenario #5 - Joliet, Romeoville, Crest Hill & Shorewood	44.97	$ 599,101,677	$ 13,322,252
Scenario #6 - Joliet, Shorewood, Channahon & Minooka	41.12	$ 656,354,461	$ 15,961,928
Scenario #7 - Joliet, Crest Hill, Shorewood & Channahon	40.76	$ 605,628,638	$ 14,858,406
Scenario #8 - Joliet, Lemont, Crest Hill, Shorewood & Channahon	47.00	$ 618,054,264	$ 13,150,091
Scenario #9 - Joliet, Crest Hill, Shorewood, Minooka, & Channahon	45.30	$ 636,197,594	$ 14,044,097
Scenario #10 - Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon	51.54	$ 656,749,050	$ 12,742,512
Scenario #11 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	59.79	$ 705,142,495	$ 11,793,653
Scenario #12 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon	55.25	$ 685,293,202	$ 12,403,497
Scenario #13 - Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	53.55	$ 699,019,524	$ 13,053,586

As noted in the Basis of Design, the costs in this table are budgetary estimates based on the Class 4 guidelines for estimating costs established by the Association for the Advancement of Cost Engineering (AACE) and are in 2020 Dollars. Budgetary estimates will continue to be developed using AACE guidelines. Final costs for the Program will be based on actual expenditures.

C. Contracts will be bid and awarded pursuant to the process established in the RWC Act, and in compliance with all state and federal funding requirements, the applicable voting requirements established in the IGA, and internal rules adopted by the Board, if any. The Board of Commissioners will review and discuss pending elements of the Project Facilities, bidding conditions and contracting strategies for cost and schedule implications prior to issuance of any construction bid packages.

D. If the Board of Commissioners does not approve a contract with the lowest responsible, qualified bidder meeting the requirements of the RWC Act, and the lack of approval could delay the completion of the Project Facilities to a date later than the Targeted Water Delivery Date, then the Board of Commissioners must concurrently approve the establishment of a new Targeted Water Delivery Date that is later than the then-current Targeted Water Delivery Date by the vote required in Section 2.F.iii. Any newly established Targeted Water Delivery Date must be of a duration to allow the work under the contract to be completed by that new Targeted Water Delivery Date. It is recognized that a short-term delay in the contracting process may occur due to unfavorable bidding conditions, receipt of bids substantially exceeding the engineer's estimate, or matters related to land acquisition, where the delay does not extend the start-up of the Project Facilities beyond the Targeted Water Delivery Date.

E. A local and disadvantaged business enterprises strategy will be used in connection with the design and construction of the Project Facilities, as provided in the Basis of Design.

F. The Board of Commissioners will determine whether to have a Commission administration office for such uses and purposes as the Board of Commissioners determines to be necessary and appropriate.

G. The Commission will contract with Joliet to perform management of the Program through start-up and commissioning of the Project Facilities:

    i. The scope of Joliet's responsibilities will include the following in connection with Program management for the Project Facilities for the purpose of delivery of Lake Michigan water from Chicago to the Members:

        a. Design: Management of preliminary design and final design, including contracting with engineering and other design professionals for the Program.

b. Permitting and Land Acquisition: Obtaining permits and other governmental approvals, and acquiring necessary real estate interests on behalf of the Commission. Land acquisition will be in accordance with all applicable federal and state funding requirements (such as the Uniform Relocation Assistance and Real Property Acquisition Act). The Commission will cooperate with Joliet in connection with, and will not unreasonably refuse or withhold approval of, any applications for such permits and approvals and acquisition of any interests in real estate, or refuse to accept assignment of such permits, approvals, and interests in real estate from Joliet.

c. Procurement: Management of procurement process for contracts, including evaluation of bids and recommendation to Board of Commissioners regarding award of each contract. Bidding and award will be consistent with Section 3.C. The Parties will discuss protocols for inclusion in the contract between the Commission and Joliet requiring that if award of a construction bid package is proposed at an amount exceeding the engineers' estimate by 20 percent or more, Joliet will provide a written explanation stating why the award of the contract that that price is in the best interests of the Commission, or a recommendation to re-bid the contract.

d. Construction Management: Monitoring all construction contracts, including inspections during construction, establishing punch list items, testing and confirming final completion of all work under each contract.

e. Start-up and Commissioning: Commissioning of Project Facilities, including start-up, training, and supporting each Member's water source transfer plan, which may include water quality monitoring and related activities within the Project Facilities for an appropriate transition period after delivery of Lake Michigan water to all Members. The transition period is anticipated to include the initial warranty periods for the Project Facilities and the completion of tasks to be performed by the Commission under each Member's water source transfer plan, following which the Program will conclude, unless Joliet and the Commission otherwise agree.

f. Oversight: Risk management, product and material sourcing, Program controls, cost forecasting and tracking, schedule development and management, reporting, and value engineering.

g. Financing: Budget development and controls, funding strategy implementation, debt, loan and grant issuance and management, and funding compliance.

h. Public Education/Outreach: Educate and inform the public on the work of the Commission and the Program, and support RWC Members in connection with their public education and outreach efforts.

i. Governmental Outreach: Federal, State and local advocacy in support of Program activities, including legislation, rules and ordinances, funding opportunities, permitting and land acquisition.

ii. In support of these duties, Joliet will fill the following roles during performance of the Program: program director, procurement and funding compliance manager, operation and maintenance liaison, and engineering director. The costs associated with performance of these roles will be negotiated with the Members/Commission and incorporated into the Program development costs advanced by Joliet.

iii. The Commission contract with Joliet will have reporting obligations and opportunities for review and input by the Board of Commissioners.

a. Reporting by Joliet to the Commission will include updates on a regular basis regarding the status of and progress on the Program and Project Facilities such as design and engineering, upcoming procurements, cost summary (including amount spent to date and forecasted amounts), construction cost estimates, schedule summary for various elements of the Program and Project Facilities, permitting milestones and land acquisition. The Commission contract with Joliet will include reporting requirements to allow periodic comparison of the baseline of costs to the engineers' estimates for the construction bid packages, contract prices at time of award, actual amounts expended on construction contracts to date and funds available for completion of construction, and a process for discussion to enable Joliet and the Commission make appropriate adjustments to the enable completion of the Project within an agreed-upon baseline of costs as may be adjusted from time to time.

b. Meetings by Joliet with the Technical Advisory Committee and with the Board of Commissioners. Meetings with each will be on a regular basis, as mutually agreed. The Technical Advisory Committee will consider all aspects of the Program and the design, construction and operational aspects of the Project

Facilities, discuss modifications to the Basis of Design and review those modifications requiring approval by the Board of Commissioners, monitor the project management by the City of Joliet, and report on a periodic basis to the Board of Commissioners. Any recommendations by the Technical Advisory Committee that require action by the Board of Commissioners will be forwarded to the Board of Commissioners for review and action.

c. Joliet will provide to the Commission materials requested by the Commission that pertain to Joliet's work under the project management agreement for inspection and audit, such as copies of the plans and specifications for Project Facilities, invoices and pay requests, and Program deliverables such as reports and technical materials.

d. If the Board of Commissioners believes Joliet is not meeting its obligations under a portion of the project management agreement, or if Joliet believes the Commission is not meeting its obligations under that agreement, the project management agreement will include a process for resolution of any issues. The process will include notice to the other party advising of the basis for the conclusion that the other party is not meeting its obligations, and a meeting between Joliet and the Commission for the purpose of conferring and reaching an understanding that would allow resolution of any such issues. The project management agreement may also include an option for a mediation process prior to commencement of litigation between Joliet and the Commission.

iv. Joliet will contract with engineering and other professionals and provide financing sufficient to pay all costs associated with engineering and other professional services for the Program. Third-party beneficiary status for the Commission will be established under the relevant engineering contracts for the Project Facilities.

v. Joliet will monitor the relevant markets for materials, equipment, and construction services and suggest modifications to control costs and identify other potentially beneficial cost control measures.

vi. The Commission will contract with construction contractors and other vendors as necessary and provide financing sufficient to pay all costs associated with construction of the Project Facilities.

vii. Joliet will have authority to make decisions on behalf of the Commission in connection with construction contracts entered into by the Commission as part of the Program, in accordance with the following principles:

a. Approval of amendments, field changes and change orders for each construction contract may be approved by Joliet within a level appropriate for each contract, will be established by the Board of Commissioners based on the contract's scope of work and contract price. Amendments, field changes and change orders may be needed for various purposes, including the need to protect public safety, limit any public inconvenience arising from the construction, and to enable completion of the work under the contract within the time specified in the particular contract. It is understood that in the event of an emergency or need to protect public safety during construction, Joliet may act to approve amendments, field changes and change orders to address these issues.

b. The project management agreement will include a process for presentation of amendments, field changes and change orders that may have been approved by Joliet between meetings of the Board of Commissioners.

c. Approvals by Joliet must be germane to the design specifications and drawings for the work specified in the contract and the intended function of the element of the Project Facilities when completed, and consistent with the Basis of Design unless otherwise approved or agreed by the Board of Commissioners.

H. The initial Project Facilities will be designed based on Charter Members' Declared 2050 Maximum Day Demand to convey water at minimum velocities in the transmission main. No excess capacity is contemplated as part of the initial Project Facilities beyond the total of the amounts declared by each Charter Member as its Declared 2050 Maximum Day Demand. Any excess capacity due to final operating capacity will be distributed proportionally among the Members based on Declared Maximum Day Demand.

I. Joliet will advance funds for development (including without limitation engineering, land acquisition, permitting, legal, financial advisors) costs, including costs of financing, (without mark-up) incurred for the Program and for Water Commission formation for the period beginning in February 2021, but not including construction costs. The Commission will reimburse Joliet for these development costs. These development costs will not include any costs incurred: (i) prior to February 1, 2021; (ii) for Joliet's study of alternative water sources; (iii) for Joliet's costs incurred in connection with obtaining its Lake Michigan water allocation permit from the Illinois Department of Natural Resources; and (iv) for Joliet's costs with respect to issues unique to its water system. All such development costs will be treated as Capital Costs/Debt Service and paid by Members based on their

Declared 2050 Maximum Day Demand. Joliet will provide invoices and summaries of items for which it has advanced funds, which will be made available to the Board of Commissioners for Member review and audit prior to reimbursement for any request.

J. The Water Commission will design, construct, own, operate and maintain all Project Facilities (except as otherwise provided as to certain items financed and owned by Chicago) including common transmission mains and water facilities upstream of each Member's delivery/metering point(s), as mutually agreed and documented in the Basis of Design.

K. The Water Commission will design, construct, own, operate and maintain the metering stations at all Members' delivery/metering points (primary and additional).

   i. A single delivery/metering point will be constructed to deliver water to each Member at a location identified by the Member and included in the Basis of Design.

   ii. Additional delivery/metering points can be added to the Water Commission Project Facilities to serve a Member at the requesting Member's expense. The locations of all additional delivery/metering points will be included in the Basis of Design. Piping leading to additional delivery/metering points from the Water Commission transmission main will be paid for by the Member but designed, constructed, owned and operated by the Water Commission. Member expense for adding one or more additional water delivery/metering points will be determined based on (a) a proportionate share of the Project Facilities design and construction engineering costs to be determined based on a ratio of the additional delivery/metering point actual construction costs divided by total Project Facilities actual construction costs, and (b) construction and land acquisition costs based on actual final costs for each delivery/metering point.

   iii. Each Member will provide a site sufficient for each of its delivery/metering points. Each Member will convey to the Commission such permanent and temporary easements in each of its sites as necessary to allow the Commission to meet its obligations pertaining to the delivery/metering point, including to construct, operate, maintain, repair and replace the delivery/metering point.

   iv. All delivery/metering points identified by Members as part of the Basis of Design will be confirmed as part of the Water Supply Agreement.

   v. A process for requesting and reviewing future delivery/metering points in addition to those included in the Program and initial construction of the Project Facilities will be included in the Water Supply Agreement.

L. Joliet will manage the design, bidding, construction inspection and administration, and start-up and commissioning of the Project Facilities performed by the team of consultants and advisors retained by Joliet pursuant to Joliet's contract with the Water Commission under Section 3.G.

M. Each Member will design, construct, own, operate and maintain its own watermains, as well as pumping and storage facilities, if needed, downstream of its delivery/metering point(s).

4. <u>FINANCIAL TERMS</u>.

A. The Commission cost categories and basis for costs ("Commission Costs") are as described in the table below.

Cost Categories	Basis for Cost	Formula
Water Supply[1]	Volumetric based on actual water usage ($ per 1,000 gallons) subject to minimum take	Actual water usage during calendar year (gallons) multiplied by Chicago water rate ($/1,000 gallons)
Capital Costs/Debt Service[2]	Based on Member's Declared Maximum Day Demand ($ per MGD) at the time of construction[5]	Final Project Capital Costs divided by Total of all Members' Declared Maximum Day Demand multiplied by Member's Declared Maximum Day Demand
OM&R Costs[1]	Operation & Maintenance: Volumetric based on actual water usage ($ per 1,000 gallons)	Actual water usage during calendar year (gallons) multiplied by Commission O&M rate ($/1,000 gallons)
	Reserve[3]: Based on Member's 2050 Maximum Day Demand ($ per MGD) and will be contributed between 2025-2029	Member's 2050 Contractual Maximum Day Demand multiplied by Annual Reserve Contribution[3] ($/year) over 5 years
Commission Administration[1,4]	Annual costs split equally between all Members	Total actual Commission Administration costs divided by Number of Commission Members

[1]The amount each year will be determined based on a formula using then-current numbers.

[2]Members acknowledge that the total of all Capital Costs/Debt Service will not be finalized until construction is complete. Debt Service will include all financing costs.

[3]The RWC Act requires the Commission to maintain an adequate depreciation fund for the Project Facilities. This contribution is intended to establish an estimated initial amount to be paid in to meet this requirement at the time that the Project Facilities commence delivery of water; contributions may change in the future in accordance with rates, charges and reserve policies established by the Board of Commissioners (see Section 4.E). The initial annual reserve contribution will be based on generating a reserve fund for depreciation by 2030 equal to 25% of the 2030 estimated operating budget.

[4]Commission Administration will be determined by the Board of Commissioners pursuant to Section 5.H but may generally include items listed in Section 5.H and others such as: In-house personnel (other than operations staff), if any; contractual services (such as financial services, legal services, outreach/engagement services), utilities, insurance, office equipment and supplies, management training/conferences, custodial services, and other administrative costs.

[5]During initial construction of the Project, the value to be used for Member's Declared 2050 Maximum Day Demand until a reallocation of capacity occurs.

B. The Parties anticipate that the Capital Costs of the Program will be paid for through issuance of Commission debt, such as revenue bonds, or loans through various programs, such as WIFIA and State Revolving Water Fund, to the maximum amount permitted by law.

C. Regardless of volume of water received by the Member, the Member must pay its share of the Capital Costs/Debt Service and the Commission Administration costs. Costs in these categories will begin to be incurred prior to first delivery of water and this payment obligation will continue. In certain circumstances, the Water Commission may incur some fixed O&M Costs that will require payment by Members regardless of volume of water delivered.

D. Each Member must purchase a minimum volume of water from the Commission on an annual basis. This volume will be a percentage of a Member's Lake Michigan allocation. This minimum volume requirement will be necessary for two Commission purposes: (i) to generate revenue to the Commission that is sufficient to enable the Commission to meet its financial obligations; and (ii) to enable the Commission to avoid a higher purchased water rate from Chicago, because the rate formula in the Water Supply Agreement with Chicago will be based on the amount of water purchased by the Commission from Chicago. The methodology to determine this volume will be established in the Water Supply Agreement and will depend on factors including, without limitation, the final membership of the Commission and the resulting average day demand and maximum day

demand for water by the Members. Failure by a Member to purchase this minimum volume of water may result in an additional charge to be assessed to that Member based on the resulting increase in the purchased water rate from Chicago attributable to such failure to take the required minimum volume. In addition, it may be that the Commission will be subject to a minimum volume purchase requirement due to requirements of the Water Supply Agreement with Chicago.

E. The Board of Commissioners will set rates and charges, including appropriate reserve policies if and as necessary.

F. If a Member fails to pay its required share of Commission Costs, the Commission will require remaining Members to assume this liability. The Water Supply Agreement will include procedures and remedies for Member nonpayment and the calculation of default shares. The Board of Commissioners may decide to establish a reserve fund to meet Commission obligations in the event that a Member is unable to make one or more payments on time. Use by the Commission of amounts from the reserve fund for this purpose does not excuse the Member that is unable to pay from its obligation to make all required payments with interest as established in the Water Supply Agreement.

G. Special Circumstance: Members agree that if the Stateville Prison located in Crest Hill closes, then Crest Hill will have the option, in its sole discretion, to return the portion of its Declared Maximum Day Demand attributable to Stateville Prison to the Commission and the then-current portion of the debt and capacity attributable to the returned portion of the Declared Maximum Day Demand will be allocated proportionally among the Members based on Declared Maximum Day Demand unless otherwise mutually agreed between and among the Members. Crest Hill agrees to work with the Commission in order to retain Stateville Prison as a Crest Hill water customer, provided that the terms of retaining Stateville Prison are equitable to Crest Hill and its other water customers.

H. Special Circumstance: In connection with Crest Hill's provision of water service to Stateville Prison, Crest Hill agrees to work with the Water Commission to negotiate with the State of Illinois terms under which the State of Illinois will (i) pay a rate that allows Crest Hill to retain funds in a reserve fund maintained by Crest Hill and/or (ii) prepay into an escrow account held by Crest Hill a security deposit or other amount sufficient to cover amounts due to Crest Hill from the State of Illinois. If these payments and funds are not sufficient to enable Crest Hill to meet its payment obligations to the Commission, Members agree that a portion of the reserve fund described in Section 4.F above would be used as a reserve to cover the potential failure of Crest Hill to pay to the Commission on a timely basis the portion of Crest Hill's Commission Costs attributable to delivery of water to

Stateville Prison due to the failure of the State of Illinois to pay Crest Hill for water on a timely basis. Use by the Commission of amounts from the reserve fund for this purpose does not excuse Crest Hill from its obligation to make all required payments with interest as established in the Water Supply Agreement.

I. The Commission may collect a growth-related capital charge ($/unit or $/PE) applicable to all new[3] Commission water users, including without limitation to residential, commercial and industrial users, to be collected by the Commission from all users who will be provided water by each Member and applied to the share of the Capital Cost/Debt Service to be paid by the Member in whose municipal/corporate limits or service area the growth is located.

J. A methodology will be established for reallocation of capacity of the Project Facilities between Commission Members prior to expansion. If any Member determines that it no longer needs its Declared Maximum Day Demand, that Member must offer its excess capacity to the Commission for reallocation, which amount will be offered for allocation first to Charter Members based on a methodology that includes the Capital Costs/Debt Service for the original Project Facilities. If regular monitoring of Member water usage, as described in Section 5.F, indicates a Member has exceeded its Declared Maximum Day Demand, the Member will be required to obtain an allocation of additional capacity through a reallocation methodology or a temporary sharing or lending arrangement involving volunteering Members with excess capacity and Members who have declared a need for additional capacity. The Water Supply Agreement may also provide for required water conservation or restriction measures and a methodology for payments to other Members to account for loss of use of capacity due to a Member exceeding its Declared Maximum Day Demand.

K. In the event that the capacity of the Project Facilities is expanded from time to time, subsequent to completion of the Program, each Member will have the opportunity to adjust the amount of its Declared Maximum Daily Demand based on the total capacity of the expanded Project Facilities, subject to the following:

   i. Each Member of the Water Commission that wishes to participate can adjust its Declared Maximum Daily Demand and will be required to contribute to the Capital Costs/Debt Service for the expansion.

   ii. A methodology for the payment of the Capital Costs/Debt Service for the expansion and any related adjustments to prior payments of Capital Costs/Debt Service will be

[3] "New" water users will be defined by the Board of Commissioners as to whether it includes new construction only or also adaptive reuse or modifications of existing structures that result in an increased water use.

determined and included in the IGA/Water Supply Agreement based on the following formula, in which "Total System Capital Costs/Debt Service" means and refers to Initial 2050 System Capital Costs/Debt Service plus Expansion Capital Costs:

Capital Reallocation Charge (Credit or Debit) =

(Member's Expanded MDD x Total System Capital Costs/Debt Service ($/MGD))

minus

(Member's 2050 Declared MDD x Initial 2050 System Capital Costs/Debt Service ($/MGD))

An example of the application of this formula will be included in the IGA/Water Supply Agreement. This formula is based on the assumption that the Project Facilities will require expansion in 2050. Provisions will be included in the IGA/Water Supply Agreement in order to address the possibility of an expansion at a different time and adjusting the formula appropriately

iii. At the time of any expansion of the capacity of the Project Facilities, any Member not wishing to participate in paying for the cost of such an expansion will not be entitled to obtain an increase in its share of Project Facilities' capacity resulting from the expansion, will not be required to contribute financially, will not be eligible to receive any reallocation of Capital Costs/Debt Service amounts previously paid by the Member, and will be deemed to have waived any right of its commissioner to vote on any matters pertaining to the design and construction of the expansion. If a Member chooses not to participate in an expansion and requires additional capacity in the future, that Member will be required to make reimbursement payments for the Capital Costs/Debt Service of the expansion design and construction to account for its appropriate share, as determined by the Board of Commissioners.

L. Additions or improvements to the Project Facilities that only improve water service to certain Members, and that do not increase overall capacity of the Project Facilities, shall be paid for by those certain Members following approval by the Commission. The Commission will not unreasonably withhold approval of such additions or improvements.

5. <u>OPERATIONS TERMS</u>.

A. Each Member agrees that Lake Michigan water from the Water Commission will be its sole water source to provide the Party's Full Water Requirements from time to time. The Parties agree that the IGA/Water Supply Agreement may include specifically identified exceptions to this rule (such as an area served by a private water utility) as well as a process by which a waiver of the obligation to take Full Water Requirements can be

granted by the Board of Commissioners based on a specific request by a Member to exclude certain territory from this requirement for a limited period of time.

B. Each Member must obtain and maintain a Lake Michigan Allocation Permit from the Illinois Department of Natural Resources.

C. Each Member must provide water storage in an amount equal to two times its daily allocation amount in the Member's allocation permit from IDNR. Members will not receive credit toward this requirement through an allocation of storage from the Project Facilities.

D. Each Member should have access to an alternate water supply source or sources in the event that an outage in the Water Commission water supply exceeds two days.

E. The water supplied to and drawn by the Members from the Project Facilities shall be at a uniform rate of flow during the 24 hours of each day.

F. The Commission will monitor and evaluate Average Day Demand and Maximum Day Demand levels of water usage by each Member in relation to its Declared Maximum Day Demand and the total capacity of the Project Facilities, in order to support the efficient and cost-effective administration and operation of the Commission and provide Project Facilities with sufficient capacity to serve the Members and other customers, if any.

G. Each Member recognizes the importance of working together to minimize peaking factor. Peaking Factor equals Maximum Day Demand divided by Average Day Demand. Therefore, the Members agree to actively manage their peak water demand by taking the following actions:

   i. Implementing controls identified by the Commission from time to time to minimize the Member's Peaking Factor, such as switching to storage and/or reducing flow rate, when feasible as determined by the Member.

   ii. Abiding by the applicable maximum Peaking Factor on an annual basis based on the then-current population of the Member as well as any service areas of the Member outside the municipal/corporate limits. Members shall certify to the Commission on an annual basis the following: the population that it serves within the municipal/corporate limits, as determined pursuant to Section 1-7-2 of the Illinois Municipal Code[4] and such other data as is available, and the population that it serves in areas outside the

[4] 65 ILCS 5/1-7-2 states in part: "Whenever in this Code any provision thereof is based upon the number of inhabitants, the number of inhabitants of the municipality shall be determined by reference to the latest census taken by authority of the United States or this state, or of that municipality. It is the duty of the Secretary of State, upon the publication of any state or United States census or the certification of any municipal census referenced under Section 1-7-1, to certify to each municipality the number of inhabitants, as shown by that census. In the event that a partial census is conducted pursuant to Section 1-7-1, the Secretary of State shall certify the total number of inhabitants of the municipality as the number reflected by the last complete census of the municipality adjusted by the net increase or decrease reflected by the partial census…."

municipal/corporate limits based upon such data as is available. Failure to comply with these maximum limits could result in an additional charge to be paid by the Member, as determined by the Commission.

Population Served	Maximum Peaking Factor
Under 25,000	2.00
25,000 to 49,999	1.80
Over 50,000	1.60

iii. Developing uniform water conservation ordinances to be adopted and enforced by each Member within its municipal/corporate limits.

iv. It is understood that certain conditions might result in a Member exceeding its peaking factor, which may include watermain breaks, fire suppression, system flush of contaminants or use of emergency interconnects. Members shall communicate adverse conditions to the Commission to minimize potential to impact overall Commission peaking factor.

H. Decisions regarding Commission staffing will be dependent on final Commission membership and will be made by the Board of Commissioners. Options include contracting out all or part of the necessary services, obtaining services from Members and/or having in-house personnel.

I. Water quality within the Project Facilities will be managed by the Commission. Water quality at the delivery/metering points where water is transferred to Members will be consistent with the applicable standards of any federal or State agency with jurisdiction over public water supplies.

J. Water quality beyond the delivery/metering points to each Member is the responsibility of that Member.

EXHIBIT B

FORM OF RESOLUTION

[Insert name of City/Village adopting Resolution]

A RESOLUTION APROVING A PRELIMINARY AGREEMENT REGARDING FORMATION OF A REGIONAL WATER COMMISSION, MAKING PRELIMINARY DECLARATIONS OF FUTURE LAKE MICHIGAN WATER NEEDS AND OTHER RELATED MATTERS

WHEREAS, the ***[Village of _____][City of _____]*** (the ***"[Village][City]")*** provides potable water service through its water system to its water customers ***("Water Service");*** and

WHEREAS, the provision of water service is a matter essential to the public health, safety, and welfare; and

WHEREAS, a safe, reliable, and ample supply of water is essential to providing cost-effective water service; and

WHEREAS, the ***[Village][City]'***s water service uses groundwater as its supply source; and

WHEREAS, in 2015, the Illinois State Water Survey (***"ISWS"***) issued its report entitled "Changing Groundwater Levels in the Sandstone Aquifers of Northern Illinois and Southern Wisconsin: Impacts on Available Water Supply" (***"2015 Report"***), which outlined the long history of its study of available water supplies in northeastern Illinois and shows that, since 2000, the levels of groundwater supply available in the Cambrian-Ordovician Aquifer (deep sandstone) beneath Will, Kane and Kendall Counties and the surrounding areas have continued to decline; and

WHEREAS, in 2020, the ISWS issued its report entitled "Analysis of Risk to Sandstone Supply in the Southwestern Suburbs: A Report to the Southwest Water Planning Group (SWPG) (Contract Report 2020-04)," dated September, 2020 (***"2020 Report"***), which quantified the sustainable yield of the deep sandstone aquifer in the southwest suburban region as ranging from 2 to 7 million gallons per day, which is insufficient to support the water needs of communities in the region; and

WHEREAS, the existing water usage within Will, Kane, Kendall and Grundy Counties and surrounding areas continues to exceed the available yield from the deep sandstone aquifer and, when combined with the anticipated growth in many communities in the region, the continuing availability of a sufficient supply of groundwater from reliable water sources has become an increasing regional concern as local governments seek to protect the public health, safety, and welfare; and

WHEREAS, in 2020, the ISWS issued a report entitled "Recent Trends in Chloride and Total Dissolved Solids in Silurian Wells in the Southwest Water Planning Group Region: Indicators of Groundwater Contamination within the Silurian Dolomite Aquifer (Contract Report 2020-03)," dated June 2020 (***"Shallow Well Report"***), which analyzed the levels of chloride and total dissolved solids in Silurian Dolomite Aquifer wells (shallow wells) and found increasing concentrations that can negatively affect water quality and require additional treatment for the removal of these contaminants; and

WHEREAS, in 2020, the Illinois Environmental Protection Agency conducted water quality sampling of all public water supplies for emerging contaminants such as per- and polyfluoroalkyl substances (***"PFAS"***) and the results of sampling show that some wells have detectable levels of PFAS in shallow wells at levels already regulated by environmental authorities in other states, and regulation of PFAS will likely be required by either federal or Illinois environmental authorities; and

WHEREAS, taken together, the 2015 Report, the 2020 Report, the Shallow Well Report and the IEPA's detection of PFAS in shallow wells reveal that long-term water supply needs of communities in the region cannot be reliably and cost-effectively met through the use of groundwater; and

WHEREAS, the ***[Village][City]*** has determined that it is in need of adequate, safe, reliable and cost-effective supplies of potable water and has worked with other municipalities in the region, including the ***[remove your Village/City from this list]*** Village of Channahon, the City of Crest

Hill, the City of Joliet, the Village of Lemont, the Village of Minooka, the Village of Romeoville and the Village of Shorewood (collectively, the ***"Potential Parties"*)*,*** and has determined that it desires to obtain a common source of water supply with one or more of the Potential Parties, which source has been determined to be Lake Michigan water; and

WHEREAS, pursuant to Article VII, Section 10 of the Illinois Constitution of 1970 and the Intergovernmental Cooperation Act, 5 ILCS 220, the ***[Village][City]*** and the Potential Parties have the power to contract or otherwise associate among themselves "to obtain or share services and to exercise, combine or transfer any power or function, in any manner not prohibited by law or by ordinance" as well as to use their revenues, credit and other resources for such activities; and

WHEREAS, the Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq.*, also authorizes the joint use and enjoyment of the powers, privileges, functions and authority of the ***[Village][City]*** and the Potential Parties; and

WHEREAS, the Illinois General Assembly has approved and the Governor has signed Public Act 102-0684 adopting the Regional Water Commissions Act, codified in 65 ILCS 5/11-135.5-1 *et seq*. (***"RWC Act"***), which authorizes two or more municipalities, at least one of which is located in whole or in part in the County of Cook, Kane, Kendall, Lake, McHenry or Will and has 140,000 or more inhabitants, to acquire, either by purchase or construction, a waterworks system or a common source of supply or water, or both, and to operate jointly and improve and extend a waterworks system or a common source of supply of water; and

WHEREAS, a group of municipalities in the southwest suburbs, including the ***[Village][City]*** and the Potential Parties, have engaged in discussions regarding the possibility of working together to establish a new water commission entity through the RWC Act, through which they would alleviate their concerns about existing water sources and pursue utilizing Lake Michigan as their water source; and

WHEREAS, the discussions to date indicate that the ***[Village][City]*** and the Potential Parties could in fact jointly develop a waterworks system utilizing Lake Michigan as their water

source, provided that Lake Michigan water allocations can be obtained by those municipalities that do not currently have an allocation, and an appropriate and acceptable framework for a new regional water commission (***"Regional Water Commission"***) to serve as the legal entity can be established to operate and govern such a joint waterworks system and common source of water supply; and

WHEREAS, in order to establish a framework for moving forward with a joint effort to establish a Regional Water Commission to facilitate the joint acquisition and operation of a waterworks system and common source of water supply, the ***[Village][City]*** and the Potential Parties have agreed on certain key principles and terms for the formation of a new Regional Water Commission, which are included in a "Preliminary Agreement Regarding Formation of a Regional Water Commission," (***"Preliminary Agreement"***) a copy of which is attached to and made a part of this resolution by this reference; and

WHEREAS, the ***[Village Board][City Council]*** of the ***[Village][City]*** has determined that it is in the best interest of the ***[Village][City]*** and its residents to approve this resolution and thereby approve the Preliminary Agreement as the first phase in the creation of a new Regional Water Commission to obtain Lake Michigan water, of which the ***[Village][City]*** will be a member municipality and one or more of the Potential Parties will also be member municipalities of the new Regional Water Commission, in order to operate and govern the joint waterworks system and common source of water supply; and

WHEREAS, in order to determine the amount of water the ***[Village][City]*** will require and the necessary capacity of the joint waterworks system to be constructed, Section 3.7 of the Preliminary Agreement requires the ***[Village][City]***, as a future Member of the regional water commission, to approve preliminary declarations of both its Declared Maximum Day Demand in the year 2050 as well as its Estimated Buildout Declared Maximum Day Demand for a point in the future when the community is at full build-out; and

WHEREAS, Declared Maximum Day Demand is defined in Section 2.5 of the Preliminary

Agreement to mean:

> [T]he amount of Lake Michigan water that a Member of the Water Commission determines to be necessary to provide the Full Water Requirements of the Member's customers at various points in time and which will be established for each Member in the IGA/Water Supply Agreement as may be amended from time to time. A Member's "Declared 2050 Maximum Day Demand" is the amount of Lake Michigan water that a Member determines to be necessary for it to provide the Full Water Requirements to the Member's customers in the year 2050;

and

WHEREAS, Estimated Buildout Declared Maximum Day Demand is defined in Section 2.6 of the Preliminary Agreement to mean "the amount of Lake Michigan water that a Member has determined is the estimated amount to be necessary to meet the Member's Full Water Requirements when the Member is at full community build-out"; and

WHEREAS, a Member's Declared 2050 Maximum Day Demand will be included in the final intergovernmental agreement establishing the regional water commission and/or the water supply agreement between the Commission and the Members, and Section 3.7.B of the Preliminary Agreement provides that this amount must be within 10 percent of the Member's preliminary declaration of its 2050 Maximum Day Demand; and

WHEREAS, ***[Village][City]*** staff and its consultants have analyzed the relevant data and information to calculate the preliminary declaration of the ***[Village][City]***'s Declared 2050 Maximum Day Demand and its Estimated Buildout Declared Maximum Day Demand and have provided a recommendation to the ***[Village Board] [City Council]***; and

WHEREAS, the ***[Village Board] [City Council]*** of the ***[Village][City]*** has determined that it is in the best interest of the ***[Village][City]*** and its residents to approve this resolution in order to provide the preliminary declaration of the ***[Village][City]***'s Declared 2050 Maximum Day Demand and its Estimated Buildout Declared Maximum Day Demand in the amounts stated in this resolution; and

WHEREAS, Section 3.6 of the Preliminary Agreement requires the ***[Village][City]*** to

appoint and designate its representatives to the Mayors' and Managers' Working Group and the Technical Advisory Group, and it is appropriate and in the best interests of the ***[Village][City]*** to approve and designate those representatives in this resolution, in order to facilitate the participation of the ***[Village][City]*** in the establishment of the Regional Water Commission pursuant to the Preliminary Agreement at the earliest opportunity;

NOW, THEREFORE, BE IT RESOLVED BY THE *[President and Board of Trustees] [City Council]* of the ***[Village][City]*,** **COUNTY OF *[insert county name]*, STATE OF ILLINOIS, as follows:**

SECTION ONE: RECITALS. The foregoing recitals are incorporated in and made a part of this resolution as findings of the ***[Village Board] [City Council]*** of the ***[Village][City]*** by this reference***.***

SECTION TWO: APPROVAL OF PRELIMINARY AGREEMENT. The Preliminary Agreement is hereby approved in form and substance conforming to the Preliminary Agreement attached to this resolution.

SECTION THREE: EXECUTION OF PRELIMINARY AGREEMENT. The ***[Village President][Mayor]*** and the ***[Village Clerk][City Clerk]*** are hereby authorized and directed to sign and seal the Preliminary Agreement in form and substance conforming to the Preliminary Agreement attached to this resolution.

SECTION FOUR: PRELIMINARY DECLARATIONS OF MAXIMUM DAY DEMAND. The ***[Village][City]***'s preliminary declarations of its needs for water supply from the Regional Water Commission are made and approved as follows:

A. Preliminary declaration of Declared 2050 Maximum Day Demand is _____ million gallons per day (MGD) ***[Note: Crest Hill should substitute the following text for A:*** Preliminary declaration of Declared 2050 Maximum Day Demand is _____ million gallons per day (MGD) for the entire City (including Stateville Prison), and _____ MGD of this amount is attributable to the provision of water

to Stateville Prison***]***; and

B. Preliminary declaration of Estimated Buildout Declared Maximum Day Demand is _____ million gallons per day (MGD). ***[Note: Crest Hill should substitute the following text for B:*** Preliminary declaration of Estimated Buildout Declared Maximum Day Demand is _____ million gallons per day (MGD) for the entire City (including Stateville Prison), and _____ MGD of this amount is attributable to the provision of water to Stateville Prison.***]***

These preliminary declarations will be used for the purposes stated in Section 3.7 of the Preliminary Agreement and further reviewed and revised by the ***[Village][City]*** prior to approval of the intergovernmental agreement to establish the Regional Water Commission.

SECTION FIVE: APPOINTMENT AND DESIGNATION OF REPRESENTATIVES TO WORKING GROUPS. The appointments of the following designated persons as ***[Village][City]***'s representatives and alternate representatives to the following Working Groups pursuant to Section 3.6 of the Preliminary Agreement are approved as follows:

A. To the Mayors' and Managers' Working Group:

1. For the category of the Village President/Mayor/Corporate Authorities: *[include name and position held]*

   Representative: _____

   Alternate Representative: _____

2. For the category of the Municipal Manager/Administrator/Municipal Management Staff: *[include name and position held]*

   Representative: _____

   Alternate Representative: _____

B. To the Technical Advisory Working Group: *[include name and position held]*

   Representative: _____

   Alternate Representative: _____

SECTION SIX: APPROVAL OF PAYMENT. The first payment of Water Commission formation administration costs pursuant to Section 3.10.A of the Preliminary Agreement is hereby approved and authorized to be paid within the time specified in the Preliminary Agreement.

SECTION SEVEN: DELIVERY OF RESOLUTION. The ***[Village Clerk] [City Clerk]*** is hereby authorized and directed to return a signed copy of the Preliminary Agreement and a certified copy of this resolution as provided in Section 4.1 of the Preliminary Agreement within seven days after the date of adoption of this resolution.

SECTION EIGHT: EFFECTIVE DATE. This resolution shall be in full force and effect upon its passage and approval in the manner required by law.

PASSED this ____ day of _____, 2022.

AYES:

NAYS:

ABSENT:

APPROVED this ____ day of _____, 2022.

_____
[Mayor][Village President] of [Village][City]

ATTEST:

_____
Clerk of ***[Village][City]***

Note to the Parties: Each Party should leave this "form" of Exhibit B in the Preliminary Agreement as a blank form, and use a copy of the form to prepare a customized resolution for its approval.

rethink water

Rethinking Water Together

Exhibit C to Preliminary Agreement

Basis of Design

Regional Water Commission
January 7, 2022
FOR MUNICIPAL APPROVAL

Stantec CMT STRAND ASSOCIATES CORNWELL

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ABBREVIATIONS AND ACRONYMS

ATS	Automatic Transfer Switch
AWSP	Alternative Water Source Program
AWWA	American Water Works Association
CDWM	Chicago Department of Water Management
CMT	Crawford, Murphy & Tilly, Inc.
CMU	Concrete Masonry Unit
DBE	Disadvantaged Business Enterprise
DIP	Ductile Iron Pipe
ft	feet
fps	feet per second
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IGA	Intergovernmental Agreement
MGD	million gallons per day
OM&R	Operation, Maintenance and Replacement
PCCP	Prestressed Concrete Cylinder Pipe
PLC	Programmable Logic Controller
psi	pounds per square inch
PS	Pump Station
RWC	Regional Water Commission
SCADA	Supervisory Control and Data Acquisition
SRF	State Revolving Fund
SWPS	Southwest Pumping Station
WIFIA	Water Infrastructure Finance and Innovation Act
WPP	water purification plant

1 Introduction

1.1 Basis of Design Objective

Since the Joliet City Council's January 2021 decision to proceed with development of a new Lake Michigan water source, significant preliminary engineering and supporting efforts have been undertaken. These efforts have focused on the development of additional detail related to the purchase of treated Lake Michigan water from the City of Chicago, the governance and membership of a Regional Water Commission (RWC), the infrastructure required to bring Chicago water to the Joliet area, and provisions for the financing of the projects required to complete delivery of the Alternative Water Source Program by 2030. Particular emphasis has been placed on the development of a quality system that is reliable, resilient, and economical for potential RWC Members and their residents. Throughout this document the Alternative Water Source Program is referred to by its initials, AWSP, or simply the Program.

This Basis of Design presents a current description of the configuration, features, and key design criteria of the proposed system to deliver the new Lake Michigan water source. It is intended to provide potential RWC Members and other AWSP stakeholders with a clear understanding of the Program design criteria used to establish estimated program costs and document the way in which the Program will be developed to provide a long-term source of water. The document defines the baseline for design and associated costs of the infrastructure to be owned by the RWC.

Many of the items contained within this Basis of Design are also referenced in other portions of the Preliminary Agreement. In the event of a conflict between this Basis of Design and the provisions of Articles I through V of the Preliminary Agreement, Articles I through V of the Preliminary Agreement shall control. In the event of a conflict between this Basis of Design and the provisions of the Key Principles, the Key Principles shall control. When the Intergovernmental Agreement and RWC Water Supply Agreements are executed, each will provide that it will control over the Basis of Design.

1.2 Alternative Water Source Program Team

The Program Team charged with the development and implementation of the Alternative Water Source Program is being led by the City of Joliet (Program Manager), but includes multiple other entities including:

- The Stantec-CMT Team of engineering and program management consultants
- Legal, financial, and advocacy specialists retained by the City of Joliet, and
- Representatives of potential RWC Member communities.

The Stantec-CMT Team was retained by the City of Joliet in April 2020[1] to serve as the lead engineering and program management consultant for AWSP activities after a thorough, competitive selection process. Members of the Stantec-CMT Team include:

- Stantec Consulting Services, Inc. (Prime Consultant)
- Crawford, Murphy & Tilly, Inc. (Lead Subconsultant to Stantec)
- Engineering Enterprises, Inc. (Subconsultant to Stantec)
- Strand Associates, Inc. (Subconsultant to Stantec)
- Cornwell Engineering Group, Inc. (Subconsultant to Stantec – Corrosion Control Expert)
- V3 Companies, Ltd. (Subconsultant to Stantec)
- Images, Inc. (Subconsultant to Stantec – Public Outreach/Communications)

The Stantec-CMT Team's role is to work with Joliet to provide the overall coordination, management, engineering design, permitting, financial consulting, and construction management services required to drive the completion of the AWSP.

Legal, financial, and advocacy specialists retained separately by Joliet to support program activities include:

- Donahue & Rose (Special Legal Counsel)
- Burns & McDonnell (Rate Consultant)
- Speer Financial (Financial Consultant)
- Katten, Muchin Rosenman, LLP (Bond Counsel)
- JP Morgan (Underwriter)
- Barnes & Thornburg (Governmental Advocacy)

Throughout 2021, the Program Team has also received valuable input from technical, administrative, and elected representatives of communities that have participated in discussions regarding the development and formation of a regional water commission. The City of Joliet, with the support of its consultants, is leading current efforts related to the formation of the RWC. Once the commission is created in early 2023, overall responsibility for the implementation of the Program will remain with Joliet (and its consultants) as the RWC's Program Manager responsible for driving the delivery and completion of the Program.

[1] While the Program Team was retained in 2020, work on the new Lake Michigan water source from the City of Chicago did not begin until February 2021.

1.3 Changes to the Basis of Design

Within this document, minimum design criteria are noted for each system component. Given the current level of design and present uncertainty related to commission membership and design capacity, design criteria presented may, in some cases, need to change as design progresses to address regulatory, permitting, environmental, or site-specific conditions. It is understood that these changes will be communicated with RWC Members.

Changes to design criteria that are not required, but which may be beneficial to the RWC can be made by the Program Team at the direction of the Program Manager if neither program costs nor program schedule are increased/lengthened. Changes to the design criteria that are not required by applicable laws, rules, or regulations, or by written agreement and that would increase program costs or lengthen program schedule will require the approval of all RWC Members. Any alteration of the design criteria in a manner that decreases Project reliability would also require unanimous approval of RWC Members.

1.4 Alternative Water Source Program Overview

1.4.1 Program Mission

The direction and actions associated with implementation of the Alternative Water Source Program are guided by the mission statement presented in the *Alternative Water Source Program Implementation Strategic Plan*. The mission of the AWSP is:

> *To provide a sustainable, reliable, and high-quality water supply for Joliet and potentially the region by 2030 in order to support the public health, safety, and economic interests of the community.*

It is important to note that this mission statement specifically includes a focus on the potential for development of the AWSP as a regional water solution. While the estimated timeframe varies within different communities in the Joliet region, data and analysis clearly indicate the groundwater aquifers will be impacted by either depletion of the deep aquifer or the deterioration of shallow aquifer water quality. Therefore, the suitability of groundwater as a potable water source is not sustainable as a long-term source of water for the region. In contrast, this Program is a viable approach for providing communities throughout the region with access to a reliable source of high quality, treated Lake Michigan water sufficient to meet the region's long-term plans for continued growth and development. And, given the infrastructure needed to complete the Program, a regional approach allows economies of scale to take effect and reduce the unit cost for water for all commission members.

1.4.2 Alternative Water Source Program Configuration

The infrastructure needed to bring water from Chicago to customers in the Joliet region includes four major system components:

1. Existing water supply and production facilities (owned by Chicago). The existing water supply and production facilities include the 68th Street/Dunne Crib complex, a 14-foot-diameter intake tunnel that connects the crib complex to shore facilities, the 720 million gallons per day (MGD) Eugene Sawyer Water Purification Plant (WPP), and the South

Tunnel System segments that convey treated water from the Sawyer WPP to the Southwest Pumping Station (SWPS) site.

2. New water transmission infrastructure to convey the water to the Southwest Suburbs (including facilities owned by Chicago and facilities owned by the RWC). The new water transmission system infrastructure will include a tunnel connection, tunnel extension, low service pump station, and service valve that will be owned by the City of Chicago. It will also include a meter vault, suction well and high service pump station adjacent to the Chicago Department of Water Management (CDWM) Southwest Pumping Station, approximately 35 miles of large diameter water transmission main, approximately 24 miles of regional transmission piping, and transmission pumping and storage facilities to be owned by the RWC. It is assumed that an RWC Administration Building (location to be determined) will also be constructed as part of the Program.

3. New water delivery infrastructure through which water is provided to individual RWC Members (owned by the RWC). Water will be provided to each member of the RWC through one or more delivery structures designed according to a standard template to provide for effective metering and water supply.

4. Existing and new water distribution infrastructure through which water is delivered by RWC Members to their individual customers (owned by the individual RWC Members). Each RWC Member will continue to operate the local pumping, storage, and distribution infrastructure needed to serve their individual water customers.

Figure 1-1 shows a schematic representation of the system components and the infrastructure that make up each component.

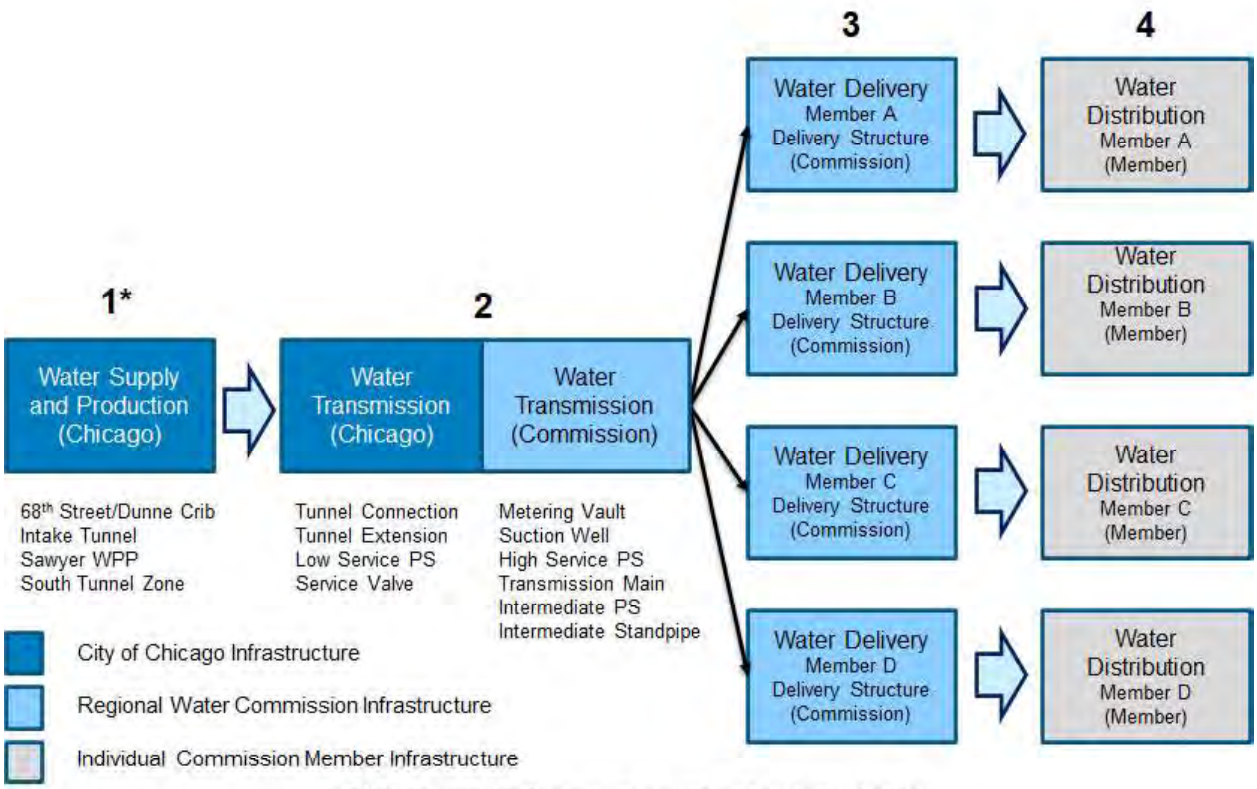
1.4.3 Alternative Water Source Program Implementation Schedule

In order to achieve the timeline identified in the Program Mission, a preliminary Program Implementation Schedule has been developed showing design, bidding/procurement, construction, start-up, and commissioning activities for the new Program infrastructure. The current schedule is presented in Exhibit 1-1. This schedule will be updated throughout the Program as work progresses while maintaining May 2030 as the targeted water delivery date.

1.4.4 Alternative Water Source Program Key Design Standards

A prudent approach to the design of a new system to serve existing and future demands over the next 100 years requires the use of adaptive management. Adaptive management allows for the flexibility to address unknown future conditions that cannot be contemplated at this time. This philosophy will be incorporated into design of the Program infrastructure.

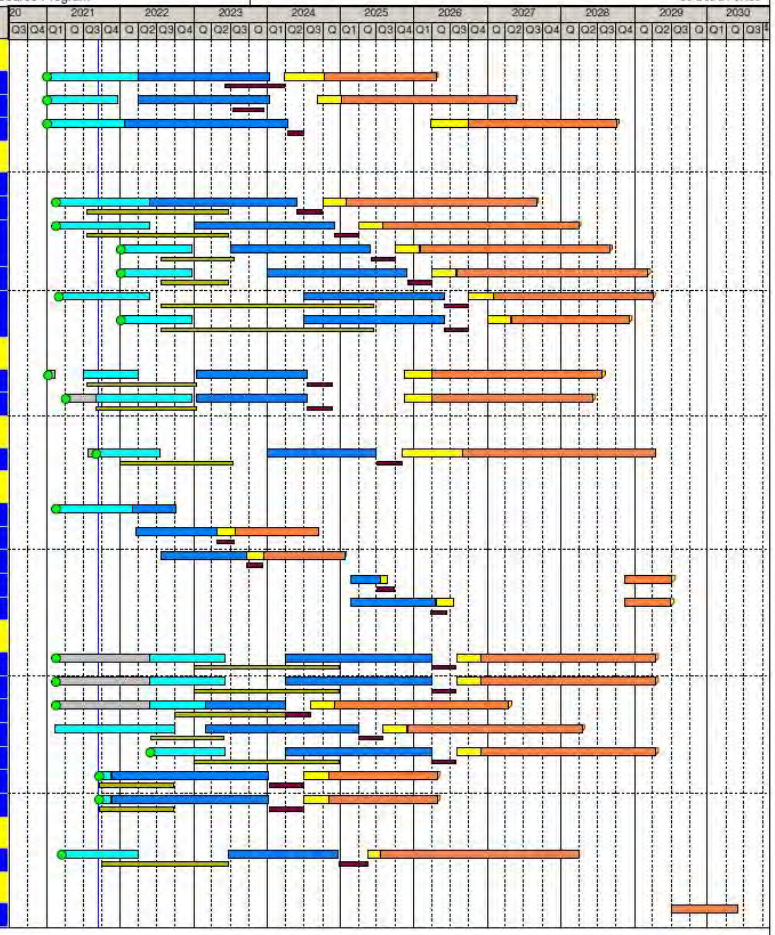
As a public water supply, the Program infrastructure will be subject to issuance of permits by the Illinois Environmental Protection Agency (IEPA) and designed in accordance with Title 35 of the Illinois Administrative Code (Part F- Public Water Supplies), and the Great Lakes - Upper Mississippi River Board (GLUMRB) Standards (Ten States Standards), except where exceptions to specific requirements are obtained from IEPA.



** These are existing Chicago water supply and production facilities*

Alternative Water Source Program — 30-Dec-21 07:35

Activity ID	Activity Name	Original Duration	Start	Finish
	CIP #1 Chicago Connection Facilities	1840	01-Jan-21 A	15-Nov-28
	Tunnel Extension (700 LF)	1199	01-Jan-21 A	02-Jun-26
	Suction Well (4 MG)	1417	01-Jan-21 A	30-Jun-27
	Low Service Pump Station and High Service Pump Station (60 MGD)	1840	01-Jan-21 A	15-Nov-28
	CIP #2 Transmission Main	1969	15-Feb-21 A	15-May-29
	Finished Water Transmission Main: Cal-Sag Crossing	181	21-Jul-27	29-Mar-28
	Potable Transmission Main - Illinois A	1555	15-Feb-21 A	13-Oct-27
	Potable Transmission Main - Illinois B	1705	15-Feb-21 A	10-May-28
	Potable Transmission Main - Illinois C	1748	03-Jan-22	13-Oct-28
	Potable Transmission Main - Illinois D	1883	03-Jan-22	20-Apr-29
	Potable Transmission Main - Illinois E	1969	01-Mar-21 A	15-May-29
	Potable Transmission Main - Illinois F	1817	03-Jan-22	18-Jan-29
	CIP #3 Intermediate Pump Station/Standpipe	1908	04-Jan-21 A	07-Sep-28
	Intermediate Pump Station/Standpipe	1791	04-Jan-21 A	07-Sep-28
	Intermediate Standpipe	1871	01-Apr-21 A	18-Jul-28
	CIP #4 Intermediate Standpipe 2 and Auxiliary Pump St	2051	26-Jul-21 A	25-May-29
	Intermediate Standpipe 2 and Auxiliary Pump Station	2051	26-Jul-21 A	25-May-29
	CIP #5 SCADA Programming	2845	14-Feb-21 A	30-Jun-29
	Final Design Fiber Conduit and Handholes/Manholes	388	14-Feb-21 A	08-Oct-22
	Fiber and Network Installation	900	22-Mar-22	06-Sep-24
	SCADA Programming/Integration	919	20-Jul-22	23-Jan-25
	Video Surveillance	1592	20-Feb-25	30-Jun-29
	Security System	1591	20-Feb-25	29-Jun-29
	CIP #6 Regional Water Transmission System	2129	12-Feb-21 A	28-May-29
	Regional Water Transmission System-A	2129	12-Feb-21 A	28-May-29
	Regional Water Transmission System-B	1978	15-Feb-21 A	28-May-29
	Regional Water Transmission System-C	1458	15-Feb-21 A	31-May-27
	Regional Water Transmission System-D	1716	15-Feb-21 A	29-May-28
	Regional Water Transmission System-E	1804	30-May-22	28-May-29
	Metering Station 2	1206	16-Sep-21	11-Jun-26
	Metering Station 1	1206	16-Sep-21	11-Jun-26
	CIP #7 Finished Water Transmission Main	1868	14-Mar-21 A	10-May-28
	Finished Water Transmission Main: Cal-Sag Crossing	1868	14-Mar-21 A	10-May-28
	CIP #11 System-wide Start-up and Commissioning	240	02-Jul-29	31-May-30
	System-wide Start-up and Commissioning	240	02-Jul-29	31-May-30



Prm Mgmt · Preliminary Design · Procurement · ROW
Planning · Final Design · Construction · PERMIT

Page 1 of 1

TASK filter: All Activities

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EXHIBIT 1-1

Title
AWSP Implementation Schedule

Client/Project
City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will, Cook, DuPage, Kendall, Grundy, and LaSalle County, IL.

Stantec · CMT Crawford, Murphy & Tilly · STRAND ASSOCIATES · CORNWELL ENGINEERING GROUP · V3

1.4.5 Alternative Water Source Program Responsibilities and Features

Successful implementation and operation of the AWSP will require the coordinated collaboration of the City of Chicago, the future RWC, and each of the communities that elects to become an RWC Member. These entities all have specific roles and responsibilities related to development of this new water system as outlined below.

1.4.5.1 City of Chicago Roles and Responsibilities

Under the Preliminary Water Supply Agreement negotiated between the City of Chicago and City of Joliet executed in March 2021, Chicago will have all responsibility for supplying treated water to the site of the proposed connection between the Chicago Water System and the RWC infrastructure to be located adjacent to Chicago's existing Southwest Pumping Station. Chicago water supply and production facilities required to deliver treated water to this location are shown in Figure 1-2 and include:

- 68th Street/Dunne Intake Crib and 14-foot-diameter Intake Tunnel (existing)
- 720 MGD Eugene Sawyer WPP (existing)
- Portions of the South Tunnel System (existing)
- A new Tunnel Connection to the South Tunnel System (proposed)
- A new Tunnel Extension (proposed)
- A new Low Service Pump Station (proposed)
- A new Chicago Service Valve (proposed)

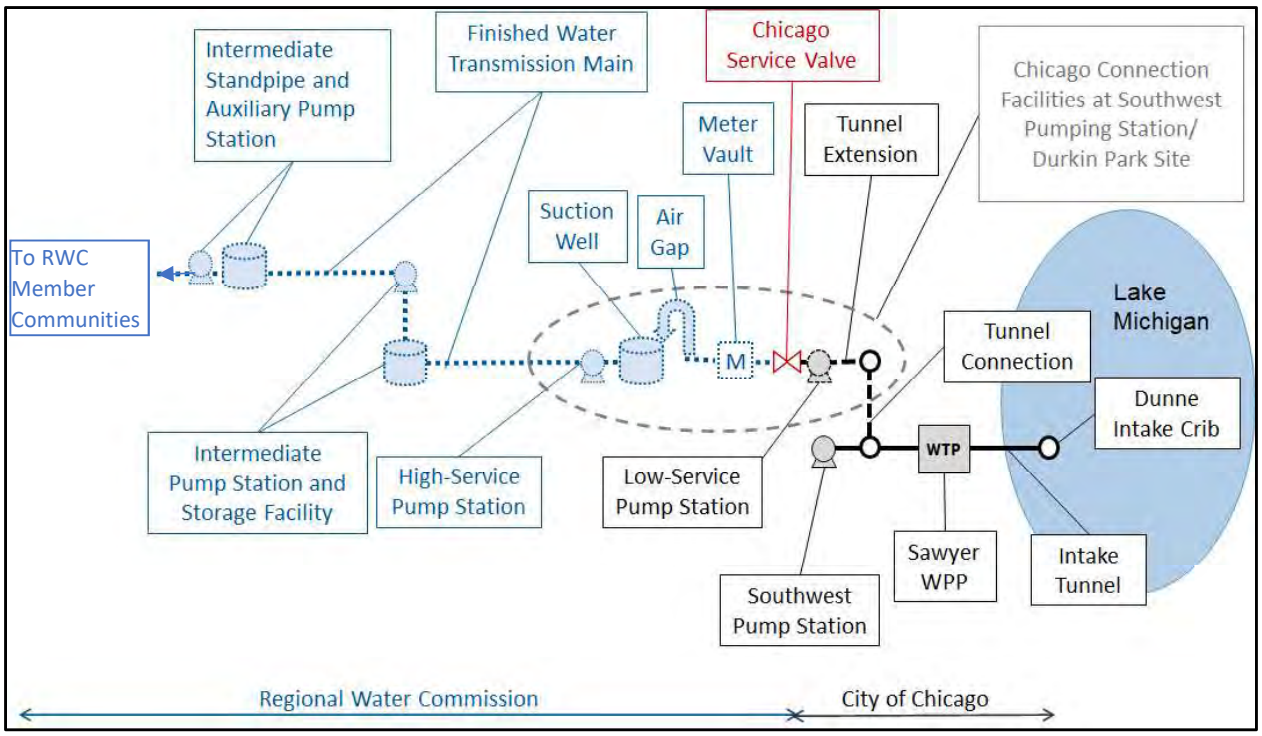


Figure 1-2. City of Chicago Water Supply for the Regional Water Commission

The Chicago Service Valve will be the point of demarcation between the City of Chicago water system and the RWC system. Descriptions of the existing City of Chicago facilities that will treat and supply water for the AWSP are presented in Section 3.

Overall responsibilities related to the planning, design, construction, financing, and operation of the facilities to be owned and operated by the City of Chicago are summarized in Table 1-1. The City of Chicago is responsible for the design and construction of the proposed new Tunnel Connection. As noted previously, Joliet will serve as the overall Program Manager for implementation of the Program and will contract for and finance engineering design and construction engineering services for the new Tunnel Extension, new Low Service Pump Station, and new Chicago Service Valve that will eventually be owned and operated by the City of Chicago. The RWC will contract for construction of these facilities while Chicago will finance the construction and will take over ownership along with responsibilities for operation and maintenance once the improvements have been constructed and start-up/commissioning has been completed.

Table 1-1. Responsibilities for Alternative Water Source Program Supply and Production Facilities to be Owned by the City of Chicago

	Design and Construction Engineering Activities	Design and Construction Engineering Costs	Construction Contracting	Construction Costs	Facility Ownership	Operation & Maintenance
Intake Crib and Tunnel	Not Applicable – Existing Facilities				Chicago	Chicago
Sawyer WPP					Chicago	Chicago
South Tunnel System					Chicago	Chicago
Tunnel Connection	Chicago	Chicago	Chicago	Chicago	Chicago	Chicago
Tunnel Extension	Joliet*	Joliet**	RWC	Chicago	Chicago	Chicago
Low Service Pump Station	Joliet*	Joliet**	RWC	Chicago	Chicago	Chicago
Chicago Service Valve	Joliet*	Joliet**	RWC	Chicago	Chicago	Chicago

Note:
* Retained as Program Manager working on behalf of the RWC
** RWC will reimburse Joliet for Design and Construction Engineering Costs
Key:
RWC = Regional Water Commission
WPP = water purification plant

Other select Chicago responsibilities related to the Alternative Water Source Program include:

- granting to Joliet (for assignment to the RWC once it is formed) the temporary and permanent easements, access rights, and other necessary property interest to allow for construction of the required infrastructure at the Southwest Pumping Station site and adjacent Durkin Park site in Chicago,
- supply of treated water at the Chicago Service Valve for a term of at least 100 years,
- supply of water that meets federal, state, and local standards for public water supplies and is commensurate in quality with that furnished to customers within the City of Chicago municipal limits,
- completion of an annual cost of service study to serve as the basis for determination of the volumetric rate at which the RWC will be charged for water purchased from the City of Chicago,

- creation and management of an Advisory Council comprised of representatives from Chicago, the Regional Water Commission, and the other municipalities and entities that are, or are under contract to become, wholesale purchasers of water from the City of Chicago.

Additional details related to the planned supply of water for the regional commission from the City of Chicago are contained in the *Preliminary Agreement between Chicago and Joliet* executed on March 17, 2021[2].

Additional details of the City of Chicago's responsibilities are being negotiated and memorialized in a Planning, Design, Construction, Financing and Operational Responsibilities Plan that will be referenced in the final Water Supply Agreement between Chicago and Joliet. Once the RWC has been created, the final Water Supply Agreement and easements will be assigned to the RWC.

1.4.5.2 Regional Water Commission Roles and Responsibilities

The RWC will be the entity responsible for purchasing treated Lake Michigan water from the City of Chicago and conveying the water from the Chicago Service Valve to delivery points for commission members. Prior to formal creation of the RWC anticipated, the City of Joliet will serve as a proxy for the RWC to drive critical program development activities forward. Once the RWC is formally created, the RWC will enter into an agreement with Joliet for Joliet to serve as the overall Program Manager for completion of the Program including design, construction, start-up and commissioning of the Project Facilities. RWC Member Communities will participate in the Program as identified in the Preliminary Agreement and the subsequent Intergovernmental Agreement.

Infrastructure that will be constructed as part of the AWSP and owned, operated, and maintained by the RWC includes:

- Chicago Connection Facilities Meter Vault (Section 5)
- Chicago Connection Facilities Suction Well (reservoir) in Durkin Park (Section 5)
- Chicago Connection Facilities High Service Pump Station adjacent to Chicago's Southwest Pumping Station (Section 5)
- New water transmission main greater than 54-inch diameter from Chicago Connection Facilities to the region (Section 6)
- an Intermediate Pump Station and Storage Facility (Section 7)
- an Intermediate Standpipe and Auxiliary Pump Station (Section 8)

[2] www.rethinkwaterjoliet.org Reports 01-28-2021 Joliet-Chicago Preliminary Agreement

- New water transmission main 48-inch and smaller diameter to convey water within the region (Section 6)
- delivery/metering stations at each commission member water delivery point (Section 9)
- a Commission Administration Building (Section 10)

The plan for the regional water system is based upon an “all for one” approach under which the RWC will construct, own, and operate all infrastructure between the Chicago Service Valve and the downstream side of the delivery/metering structure(s) for each RWC Member. The "all for one" approach encourages maximum participation in the RWC, thereby reducing capital costs per unit for each Member. It has been agreed that costs for the infrastructure required to establish one primary water delivery point for each commission member (including regional transmission main and delivery/metering structure) will be included in the total Program costs to be shared by all RWC Members. Costs associated with the construction of more than one water delivery point for any Member, would be paid by that Member. This includes the cost of the piping from the RWC transmission main as well as the cost of the additional delivery/metering structures. Figure 1-3 illustrates the “all for one” approach using a schematic of the proposed RWC system. Responsibilities related to the planning, design, construction, financing, and operation of these facilities are summarized in Table 1-2.

The City of Joliet initiated and is currently leading efforts related to the development of the RWC water system, including efforts to form a regional water commission. Joliet will continue in this role throughout the period leading to the formal creation of the RWC. At that time, Joliet will be retained by the RWC as its Program Manager for completion of the design, permitting, land acquisition, construction, start-up and commissioning activities required to implement the Program. The RWC will hold all construction contracts for commission infrastructure and be responsible for operation and maintenance of the new infrastructure once constructed and start-up/commissioning is completed. Once start-up, commissioning, and water quality monitoring during an appropriate transition period are completed, Joliet’s management of the Program will conclude as provided in the program management agreement between the RWC and Joliet.

Once the RWC system is operational, the RWC will be responsible for purchasing treated Lake Michigan water from the City of Chicago and conveying that water to the delivery points for all of its members. The RWC will deliver water to members at a minimum pressure of 25 pounds per square inch (psi) and with a free chlorine residual of at least 0.5 parts per million. The target chlorine residual with maximum upper limit will be determined in consultation with Member Communities. The upper limit shall be no lower than the free chlorine residual supplied by Chicago at the Southwest Pump Station.

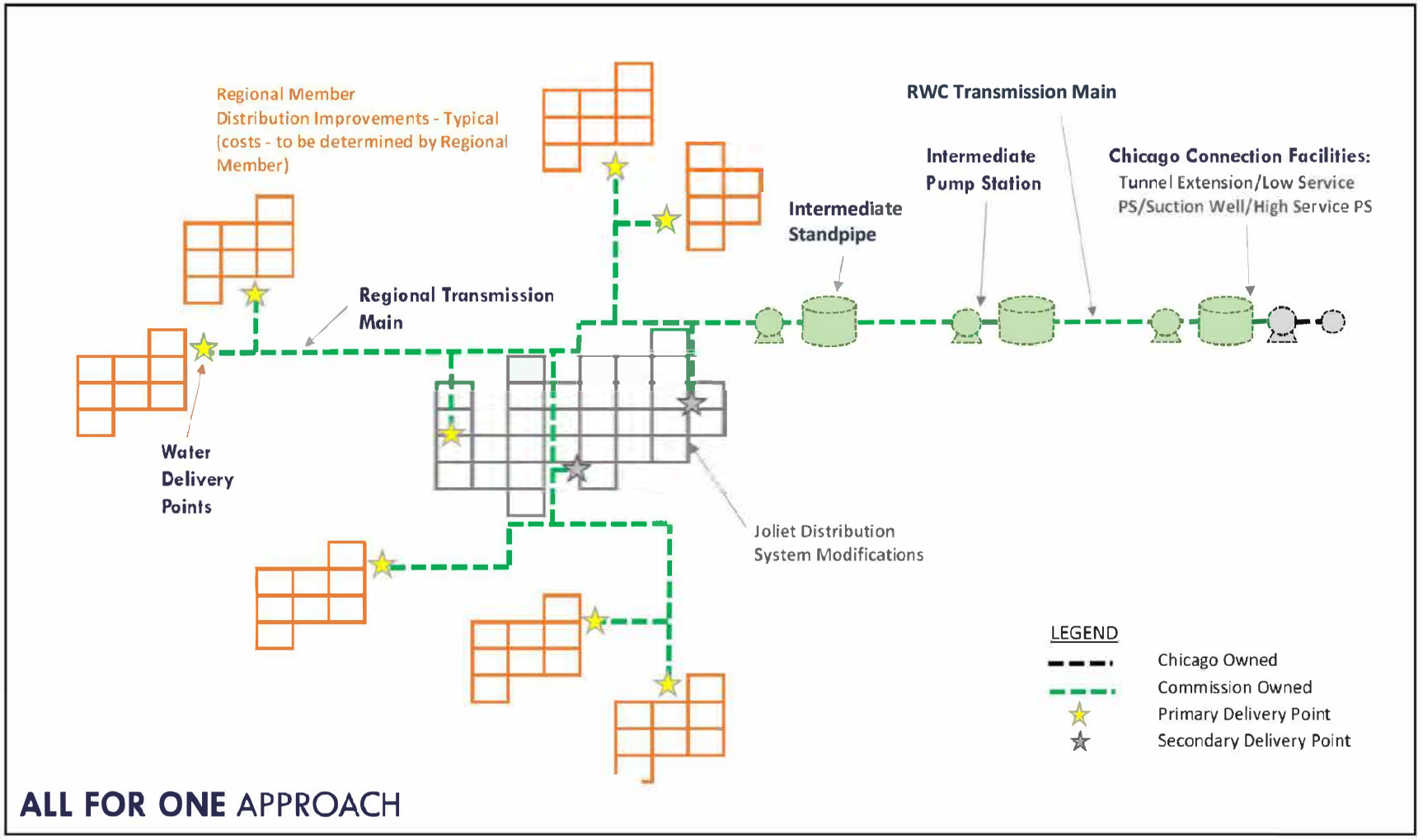


Figure 1-3. Alternative Water Source Program Schematic and All for One Approach

Table 1-2. Responsibilities for Alternative Water Source Program Transmission Facilities to be Owned by the Regional Water Commission

	Design and Construction Engineering Activities	Design and Construction Engineering Costs	Construction Contracting	Construction Costs	Facility Ownership	Operation & Maintenance
Meter Vault	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Suction Well	Joliet*	Joliet**	RWC	RWC	RWC	RWC
High Service Pump Station	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Transmission Main	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Intermediate Pump Station	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Intermediate Standpipe	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Regional Transmission Main	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Delivery/ Metering Stations (Primary)	Joliet*	Joliet**	RWC	RWC	RWC	RWC
Delivery/ Metering Stations & Piping (Additional)	Joliet*	Joliet***	RWC	RWC****	RWC	RWC
Commission Admin Building	Joliet*	Joliet**	RWC	RWC	RWC	RWC

Note:
* Retained as Program Manager working on behalf of the RWC
** RWC will reimburse Joliet for Design and Construction Engineering Costs
***RWC will reimburse Joliet for Design and Construction Engineering Costs based on payments by members requiring additional delivery points
****Members requiring additional delivery points will reimburse RWC for Construction Costs

Key:
RWC = Regional Water Commission

1.4.5.3 Regional Water Commission Member Responsibilities and Timeline

The entities that plan to become members of the RWC will indicate their intent to join the commission through the approval of a Preliminary Agreement. In the agreement, each entity will have a preliminary declaration of its 2050 Declared Maximum Day Demand and its Estimated Build-out Declared Maximum Day Demand. It is understood that the final declaration of each Member's 2050 Declared Maximum Day Demand will be included in the intergovernmental agreement (IGA) which forms the Commission and shall be within 10% of the preliminary declaration amount. The total of the 2050 Maximum Day Demand declarations of the Members who approve the Preliminary Agreement will determine the design capacity for the RWC system. Figure 1-4 illustrates the anticipated timeline for commission formation. Specific dates in this figure may be revised as details of the preliminary agreement between RWC Members are finalized.

Prior to the formal creation of the RWC, all communities intending to become RWC Members must obtain a Lake Michigan water allocation permit from the Illinois Department of Natural Resources (IDNR) and comply with IDNR rules including the need to achieve or establish a plan for achieving a level of non-revenue water less than 10% by 2030.

Once allocation permits have been obtained, the communities will each execute an IGA that establishes the RWC and identifies their 2050 Declared Maximum Day Demand. In addition, Members will approve a water supply agreement with the RWC that incorporates the negotiated terms under which water will be delivered.

During implementation of the Program, RWC Members will provide input to the Program (being managed by Joliet), make payments to cover Commission administration costs, and contribute to the Commission's operation, maintenance, and replacement (OM&R) reserve. Details of the anticipated AWSP capital costs to be paid by RWC Members are presented in Section 2 of this document.

Figure 1-4. Regional Water Commission Formation Timeline

1.4.5.4 Member Responsibilities for Local Distribution Infrastructure

Each RWC Member will have to plan, design, permit, and construct improvements downstream of the proposed water delivery points that are required for the effective and reliable operation of their system. At a minimum, these improvements will include pumping facilities required to maintain service pressures in their system, water storage facilities with a total volume equal to two times their IDNR Lake Michigan Allocation (i.e., average day demand), and provisions for an alternate water supply source(s) for use in the event of a primary supply outage which exceeds two days in duration.

RWC Members will also have to develop a system-specific Water Source Transfer Plan and implement actions required to obtain regulatory approvals for their planned 2030 change in water source.

Once the new water system is operational, RWC Members will continue to be responsible for the effective operation and maintenance of their water system infrastructure downstream of the RWC delivery/metering station(s).

2 Alternative Water Source Program Regional Scenarios and Design Flows

Extensive efforts have been undertaken during 2021 to develop and communicate information regarding potential regional water supply scenarios to communities considering participation with Joliet in the formation of a new regional water commission. Specific information related to potential commission members, their projected future water requirements, possible regional demand scenarios, and Program costs are presented below.

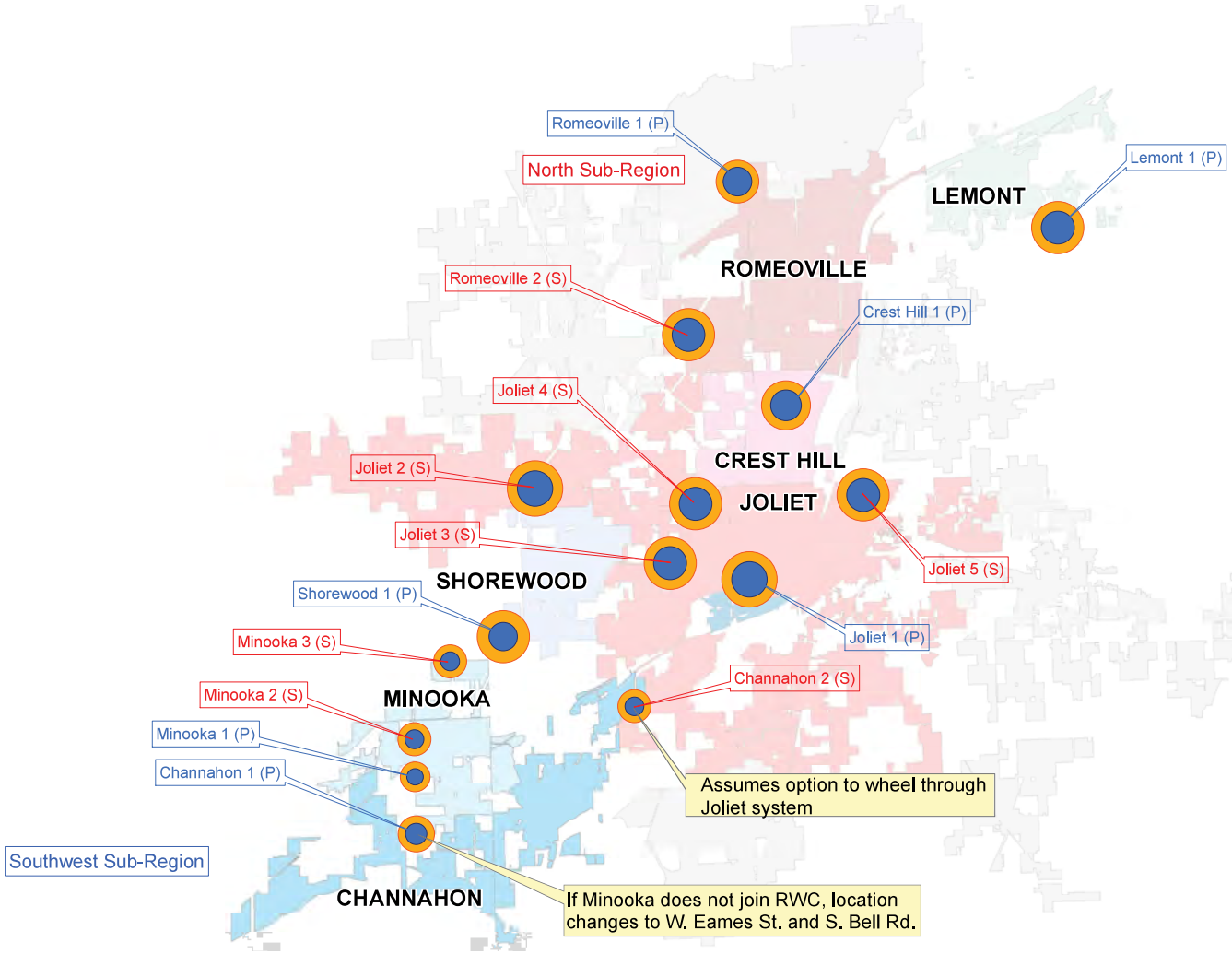
2.1 Potential RWC Members

Currently a total of seven (7) municipalities are engaged in discussions related to the formation of a new regional water commission. These municipalities include:

- Channahon
- Crest Hill
- Joliet
- Lemont
- Minooka
- Romeoville
- Shorewood

The Village of Rockdale has indicated that it will not be an RWC Member but will instead obtain its water as a wholesale customer of the City of Joliet.

Exhibit 2-1 shows the current boundaries of these potential commission members as well as locations of community-identified water delivery points for each. The size of the circle used to designate the location of each delivery point is representative of the projected 2050 Average Day Demand and 2050 Maximum Day Demand to be supplied at that site. Projected 2030, 2050, and Build-out water demands provided by the communities for each delivery point are summarized in Table 2-1.



Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-1

Title

Potential Regional ~~Partners~~
2050 Average Day & Maximum Day Demands

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/10/2021

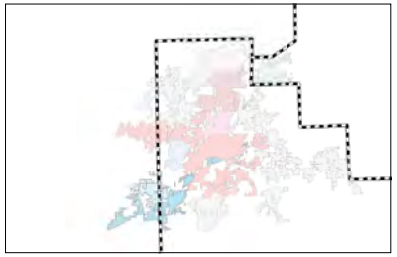
N

0 1.5 3 6 Miles

(At original document size of 22x34)
1 Inch = 8000 Ft

Legend

- 2050 Average Day Demand
- 2050 Maximum Day Demand



Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background

Stantec | CMT Crawford, Murphy & Tilly | STRAND ASSOCIATES | CORNWELL ENGINEERING GROUP | V3

Document Path: J:\Joliet\20092094-00_JolietAWSPPrelimDesign\GIS\Maps\Regional\2050 Demand Heat Map 12-9.mxd

Table 2-1. Projected 2030, 2050, and Build-out Demands: Potential RWC Members

Potential RWC Members	Delivery Point Hierarchy	Delivery Point Location	2030 Demands (MGD)		2050 Demands (MGD)		Build-out Demands (MGD)	
			Average Day	Maximum Day	Average Day	Maximum Day	Average Day	Maximum Day
Channahon	Primary[3]	South of US 6 and Ridge Road, next to the water tower (Tower 3)	0.74	1.41	1.34	2.28	2.22	4.19
	Secondary (option to wheel through Joliet system)	Route 6 and McDonald Drive	0.58	1.09	1.03	1.76	1.72	2.14
Crest Hill	Primary	Well 10 site at Oakland Avenue and Caton Farm Road	2.18	3.21	2.81	4.18	2.81	4.18
Joliet	Primary	Stryker Avenue [1,2]	1.82	2.29	5.12	6.34	11.41	14.14
	Secondary	West/Central High Zone – Drauden Road & River Road	5.99	7.42	9.29	11.52	11.21	13.90
	Tertiary	Essington (Well 10D) – Essington Road and Jefferson Street	2.95	3.65	2.82	3.50	4.89	6.06
	Quaternary	Ingalls (Well 11D) – Ingalls Avenue and Gael Drive	2.95	3.65	2.82	3.50	4.89	6.06
	Quinary	Fairmount Avenue & Garvin Avenue [2]	2.71	3.35	2.57	3.18	4.54	5.63
	Future	*TBD*	--	--	--	--	10.86	13.47
Lemont	Primary	131st Street and Derby Road	2.62	4.45	3.67	6.24	3.94	6.70
Minooka	Primary	Brannick Road and McLinden Road	0.41	0.71	0.69	1.14	1.47	2.34
	Secondary	Minooka Road and McLinden Road	0.66	1.13	1.10	1.82	2.35	3.76
	Tertiary	Wildy Road and Ridge Road (Well House 8 and WTP)	0.57	0.99	0.96	1.59	2.05	3.29
Romeoville	Primary	1204 Remington Boulevard	1.84	2.77	2.13	3.20	2.13	3.20
	Secondary	1680 W Airport Road	2.91	4.36	3.37	5.05	3.37	5.05
Shorewood	Primary	Mound Road	1.71	3.42	2.25	4.50	5.20	10.40

Note:
[1]Rockdale assumed to be a wholesale customer of Joliet and included in demands for Joliet's Primary Water Delivery Point.
[2] Primary delivery point for Joliet varies based on Scenario between the Stryker Avenue Site and the Fairmount & Garvin Site. For Scenarios which do not have the Fairmount Avenue & Garvin Avenue Site, demands have been included at the Stryker Avenue Site.
[3] If Minooka does not join RWC, location changes to West Eames Street and South Bell Road.

Key:
EWST = Elevated Water Storage Tank
MGD = million gallons per day
RWC = Regional Water Commission
WTP = water treatment plant

The number and location of delivery points required for each potential RWC Member were determined through collaboration with community water system representatives. As indicated previously all member connection piping and metering/delivery structures will be designed, constructed, owned, and operated by the RWC. Costs for the construction of infrastructure required to bring water to one “primary” delivery point for each community will be included in the costs paid by the RWC under the all-for-one approach. Where an RWC Member requires more than one delivery point, that Member will pay the costs for construction of any connection piping, including appurtenances, and delivery structures associated with those “secondary” water delivery points.

Extensive hydraulic modeling has been performed to determine the size and extent of transmission main improvements required for various regional scenarios as described in the following section. The final configuration of the system will be updated following the execution of the Preliminary Agreement by RWC Members.

2.2 Regional Supply Scenarios and Design Flows

While the seven municipalities have been engaged in discussions related to the formation of a new regional water commission, none have formally committed to the RWC as of this writing as they are working to complete individual evaluations of their water source options. In the interim, 13 hypothetical commission membership regional demand scenarios have been developed for use in ongoing evaluations of the costs and features of the RWC system. The scenarios developed do not reflect any commitment on the part of the municipalities included, rather they reflect efforts to establish options with capacity requirements spanning a wide range.

Tables 2-2, 2-3, and 2-4 show the detailed basis for projections of potential 2030, 2050, and Build-out water demands for the hypothetical regional demand scenarios. Table 2-5 provides a summary of demands for each scenario. Exhibits 2-2 through 2-14 show conceptual configurations for the regional water transmission infrastructure required to serve each of these hypothetical regional demand scenarios to meet 2050 Maximum Day Demands.

2.3 Capital Costs for Regional Scenarios

Conceptual costs prepared for these scenarios have been used to demonstrate the economies of scale created through the development of an RWC that includes multiple members and to provide potential RWC Members with estimates of new infrastructure costs. Capital costs for each scenario have been prepared for infrastructure to be owned, operated, and maintained by the RWC to meet the total of the Member’s 2050 Declared Maximum Day Demand. This infrastructure includes the following major projects:

- Chicago Connection Facilities (CIP #1)
    - RWC Infrastructure downstream of the Chicago Service Valve, including Suction Well and High Service Pump Station
- Transmission Main (CIP #2, #6, #7)
- Intermediate Pump Station (CIP #3)

- Intermediate Standpipe and Auxiliary Pump Station (CIP #4)
- Regional Pump Station (if required based on the hydraulics of the final region Scenario)
- Member Delivery/Metering Station
- Water Commission Offices
- SCADA System (CIP #5)

Capital costs for the above infrastructure were estimated based on size, capacity, site conditions, permitting requirements and minimum design criteria as noted in this Basis of Design Summary. All estimates are Class 4 AACE Estimates in 2020 dollars and include a 25% construction contingency and 20% for engineering, legal, administrative, government affairs and public outreach costs.

Using the “all for one” approach, costs were allocated to the RWC and Member communities with Member communities paying for non-primary delivery metering stations as well as piping from the RWC transmission main leading to the non-primary delivery/metering stations.

Table 2-6 presents a summary of the conceptual capital costs generated for the 13 regional scenarios. Estimated capital costs expressed in dollars per MGD are shown graphically in Figure 2-1. RWC costs will be paid by the Members based on their 2050 Declared Maximum Day Demand times the capital costs ($ per MGD) noted in the figure. This establishes the baseline Program capital costs.

More detailed descriptions of the design criteria are presented for each RWC system component in Sections 5 through 10 of this report.

Table 2-2. Projected 2030 Water Demands: Potential Regional Scenarios 1 to 6

Regional Communities	Population	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Maximum To Average Ratio	Scenario # 1 - Joliet & Shorewood		Scenario #2 - Joliet, Crest Hill & Shorewood		Scenario #3 - Joliet, Crest Hill, Shorewood & Minooka		Scenario #4 - Joliet, Romeoville & Shorewood		Scenario #5 - Joliet, Romeoville, Crest Hill & Shorewood		Scenario #6 - Joliet, Shorewood Channahon & Minooka	
					Ave Day Demand (MGD)	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*
Channahon	19,292	1.32	2.50	1.89	--	--	--	--	--	--	--	--	--	--	1.32	2.50
Crest Hill	24,570	2.18	3.21	1.47	--	--	2.18	3.21	2.18	3.21	--	--	2.18	3.21	--	--
Joliet*	169,358	16.42	20.36	1.24	16.42	20.36	16.42	20.36	16.27	20.18	16.42	20.36	16.42	20.36	16.42	20.36
Lemont	25,000	2.62	4.45	1.70	--	--	--	--	--	--	--	--	--	--	--	--
Minooka	16,607	1.64	2.83	1.73	--	--	--	--	1.64	2.83	--	--	--	--	1.64	2.83
Romeoville	56,820	4.75	7.13	1.50	--	--	--	--	--	--	4.75	7.13	4.75	7.13	--	--
Shorewood	19,847	1.71	3.42	2.00	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42
Totals					**18.13**	**23.78**	**20.31**	**26.99**	**21.95**	**29.82**	**22.88**	**30.91**	**25.06**	**34.12**	**21.09**	**29.11**

*Includes demands for Joliet wholesale customers including Rockdale.

Key:
MGD = million gallons per day

Table 2-2. Projected 2030 Water Demands: Potential Regional Scenarios 7 to 13

Regional Communities	Population	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Maximum To Average Ratio	Scenario # 7 – Joliet, Crest Hill, Shorewood & Channahon		Scenario #8 - Joliet, Lemont, Crest Hill, Shorewood & Channahon		Scenario #9 - Joliet, Crest Hill, Shorewood, Minooka & Channahon		Scenario #10 - Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon		Scenario #11 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka & Channahon		Scenario #12 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon		Scenario #13 - Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	
					Ave Day Demand (MGD)	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*
Channahon	19,292	1.32	2.50	1.89	1.32	2.50	1.32	2.50	1.32	2.50	1.32	2.50	1.32	2.50	1.32	2.50	1.32	2.50
Crest Hill	24,570	2.18	3.21	1.47	2.18	3.21	2.18	3.21	2.18	3.21	2.18	3.21	2.18	3.21	2.18	3.21	2.18	3.21
Joliet*	169,358	16.42	20.36	1.24	16.42	20.36	16.42	20.36	16.42	20.36	16.42	20.36	16.42	20.36	16.42	20.36	16.42	20.36
Lemont	25,000	2.62	4.45	1.70	--	--	2.62	4.45	--	--	2.62	4.45	2.62	4.45	2.62	4.45	--	--
Minooka	16,607	1.64	2.83	1.73	--	--	--	--	1.64	2.83	1.64	2.83	1.64	2.83	--	--	1.64	2.83
Romeoville	56,820	4.75	7.13	1.50	--	--	--	--	--	--	--	--	4.75	7.13	4.75	7.13	4.75	7.13
Shorewood	19,847	1.71	3.42	2.00	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42	1.71	3.42
Totals					**21.63**	**29.49**	**24.25**	**33.94**	**23.27**	**32.32**	**25.89**	**36.77**	**30.64**	**43.90**	**29.00**	**41.07**	**28.02**	**39.45**

*Includes demands for Joliet wholesale customers including Rockdale.

Key:
MGD = million gallons per day

Table 2-3. Projected 2050 Water Demands: Potential Regional Scenarios 1 to 6

Regional Communities	Population	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Maximum To Average Ratio	Scenario # 1 - Joliet & Shorewood		Scenario #2 - Joliet, Crest Hill & Shorewood		Scenario #3 - Joliet, Crest Hill, Shorewood & Minooka		Scenario #4 - Joliet, Romeoville & Shorewood		Scenario #5 - Joliet, Romeoville, Crest Hill & Shorewood		Scenario #6 - Joliet, Shorewood Channahon & Minooka	
					Ave Day Demand (MGD)	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*
Channahon	30,919	2.37	4.04	1.70	--	--	--	--	--	--	--	--	--	--	2.37	4.04
Crest Hill	32,610	2.81	4.18	1.49	--	--	2.81	4.18	2.81	4.18	--	--	2.81	4.18	--	--
Joliet*	202,559	22.62	28.04	1.24	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04
Lemont	35,000	3.67	6.24	1.70	--	--	--	--	--	--	--	--	--	--	--	--
Minooka	30,000	2.74	4.54	1.66	--	--	--	--	2.74	4.54	--	--	--	--	2.74	4.54
Romeoville	66,462	5.50	8.25	1.50	--	--	--	--	--	--	5.50	8.25	5.50	8.25	--	--
Shorewood	23,540	2.25	4.50	2.00	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50
Totals					**24.87**	**32.54**	**27.68**	**36.72**	**30.42**	**41.26**	**30.37**	**40.79**	**33.18**	**44.97**	**29.98**	**41.12**

*Includes demands for Joliet wholesale customers including Rockdale.

Key:
MGD = million gallons per day

Table 2-3. Projected 2050 Water Demands: Potential Regional Scenarios 7 to 13

Regional Communities	Population	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Maximum To Average Ratio	Scenario # 7 – Joliet, Crest Hill, Shorewood & Channahon		Scenario #8 - Joliet, Lemont, Crest Hill, Shorewood & Channahon		Scenario #9 - Joliet, Crest Hill, Shorewood, Minooka & Channahon		Scenario #10 - Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon		Scenario #11 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka & Channahon		Scenario #12 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon		Scenario #13 - Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	
					Ave Day Demand (MGD)	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*
Channahon	30,919	2.37	4.04	1.70	2.37	4.04	2.37	4.04	2.37	4.04	2.37	4.04	2.37	4.04	2.37	4.04	2.37	4.04
Crest Hill	32,610	2.81	4.18	1.49	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18
Joliet*	202,559	22.62	28.04	1.24	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04	22.62	28.04
Lemont	35,000	3.67	6.24	1.70	--	--	3.67	6.24	--	--	3.67	6.24	3.67	6.24	3.67	6.24	--	--
Minooka	30,000	2.74	4.54	1.66	--	--	--	--	2.74	4.54	2.74	4.54	2.74	4.54	--	--	2.74	4.54
Romeoville	66,462	5.50	8.25	1.50	--	--	--	--			--	--	5.50	8.25	5.50	8.25	5.50	8.25
Shorewood	23,540	2.25	4.50	2.00	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50	2.25	4.50
Totals					**30.05**	**40.76**	**33.72**	**47.00**	**32.79**	**45.30**	**36.46**	**51.54**	**41.96**	**59.79**	**39.22**	**55.25**	**38.29**	**53.55**

*Includes demands for Joliet wholesale customers including Rockdale.

Key:
MGD = million gallons per day

Table 2-4. Projected Build-out Water Demands: Potential Regional Scenarios 1 to 6

Regional Communities	Population	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Maximum To Average Ratio	Scenario # 1 - Joliet & Shorewood		Scenario #2 - Joliet, Crest Hill & Shorewood		Scenario #3 - Joliet, Crest Hill, Shorewood & Minooka		Scenario #4 - Joliet, Romeoville & Shorewood		Scenario #5 - Joliet, Romeoville, Crest Hill & Shorewood		Scenario #6 - Joliet, Shorewood Channahon & Minooka	
					Ave Day Demand (MGD)	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*
Channahon	48,358	3.94	6.34	1.61	--	--	--	--	--	--	--	--	--	--	3.94	6.34
Crest Hill	32,610	2.81	4.18	1.49	--	--	2.81	4.18	2.81	4.18	--	--	2.81	4.18	--	--
Joliet*	470,671	47.80	59.26	1.24	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26
Lemont	37,500	3.94	6.70	1.70	--	--	--	--	--	--	--	--	--	--	--	--
Minooka	50,000	5.87	9.39	1.60	--	--	--	--	5.87	9.39	--	--	--	--	5.87	9.39
Romeoville	66,462	5.50	8.25	1.50	--	--	--	--	--	--	5.50	8.25	5.50	8.25	--	--
Shorewood	65,000	5.20	10.40	2.00	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40
Totals					**53.00**	**69.66**	**55.81**	**73.84**	**61.68**	**83.23**	**58.50**	**77.91**	**61.31**	**82.09**	**62.81**	**85.39**

*Includes demands for Joliet wholesale customers including Rockdale.

Key:
MGD = million gallons per day

Table 2-4. Projected Build-out Water Demands: Potential Regional Scenarios 7 to 13

Regional Communities	Population	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Maximum To Average Ratio	Scenario # 7 – Joliet, Crest Hill, Shorewood & Channahon		Scenario #8 - Joliet, Lemont, Crest Hill, Shorewood & Channahon		Scenario #9 - Joliet, Crest Hill, Shorewood, Minooka & Channahon		Scenario #10 - Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon		Scenario #11 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka & Channahon		Scenario #12 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon		Scenario #13 - Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	
					Ave Day Demand (MGD)	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*	*Ave Day Demand (MGD)*	*Max Day Demand (MGD)*
Channahon	48,358	3.94	6.34	1.61	3.94	6.34	3.94	6.34	3.94	6.34	3.94	6.34	3.94	6.34	3.94	6.34	3.94	6.34
Crest Hill	32,610	2.81	4.18	1.49	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18	2.81	4.18
Joliet*	470,671	47.80	59.26	1.24	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26	47.80	59.26
Lemont	37,500	3.94	6.70	1.70	--	--	3.94	6.70	--	--	3.94	6.70	3.94	6.70	3.94	6.70	--	--
Minooka	50,000	5.87	9.39	1.60	--	--	--	--	5.87	9.39	5.87	9.39	5.87	9.39	--	--	5.87	9.39
Romeoville	66,462	5.50	8.25	1.50	--	--	--	--			--	--	5.50	8.25	5.50	8.25	5.50	8.25
Shorewood	65,000	5.20	10.40	2.00	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40	5.20	10.40
Totals					**59.75**	**80.18**	**63.69**	**86.88**	**65.62**	**89.57**	**69.56**	**96.27**	**75.06**	**104.52**	**69.19**	**95.13**	**71.12**	**97.82**

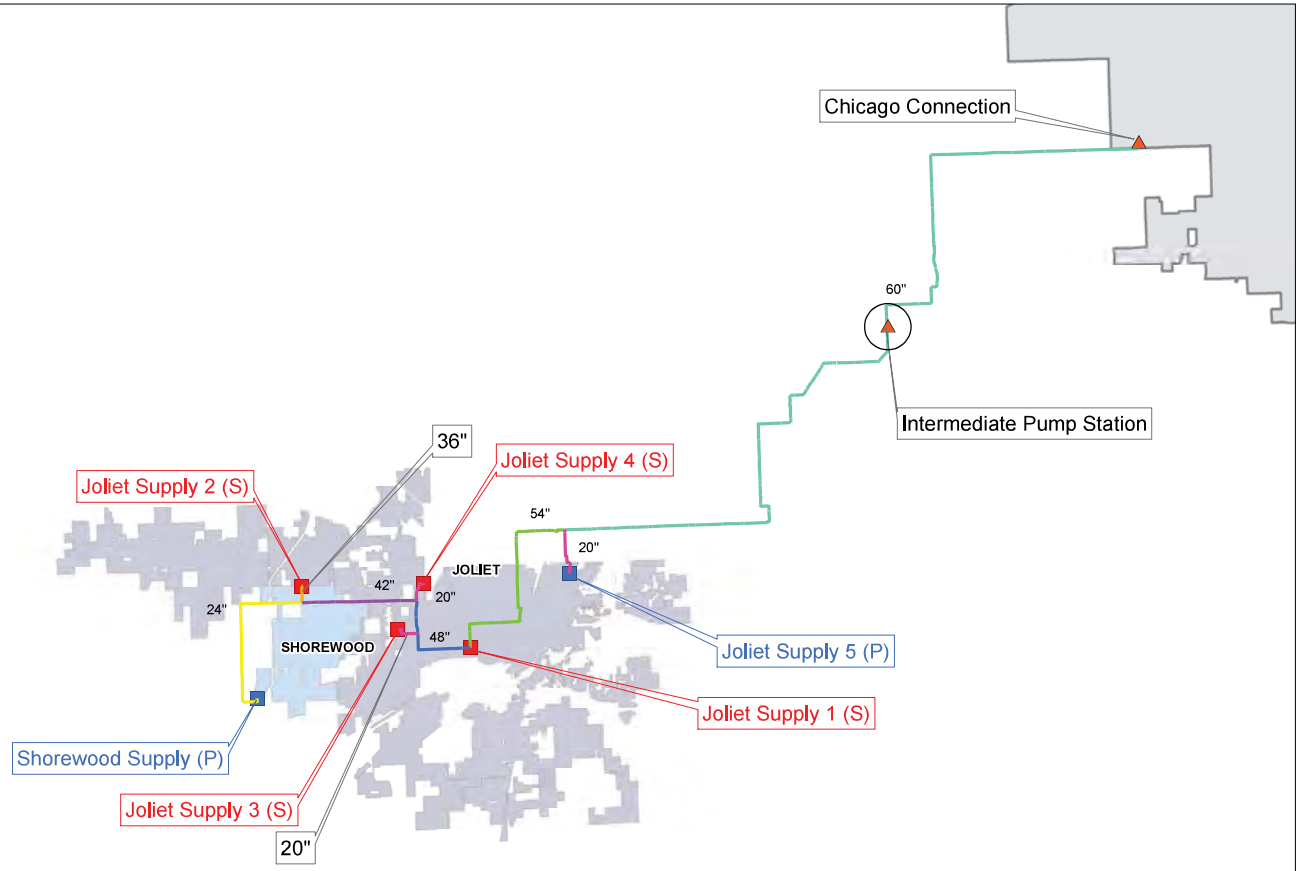
*Includes demands for Joliet wholesale customers including Rockdale.

Key:
MGD = million gallons per day

Table 2-5. Projected Water Demand Summary: Potential Regional Scenarios 1 to 13

	2030				2050			Build-out		
Regional Demand Scenario	**Minimum Day Demand (MGD)**	**Average Day Demand (MGD)**	**Maximum Day Demand (MGD)**	**Maximum To Average Ratio**	**Average Day Demand (MGD)**	**Maximum Day Demand (MGD)**	**Maximum To Average Ratio**	**Average Day Demand (MGD)**	**Maximum Day Demand (MGD)**	**Maximum To Average Ratio**
Scenario #1 - Joliet & Shorewood	14.50	18.13	23.78	1.31	24.87	32.54	1.31	53.00	69.66	1.31
Scenario #2 - Joliet, Crest Hill & Shorewood	16.25	20.31	26.99	1.33	27.68	36.72	1.33	55.81	73.84	1.32
Scenario #3 - Joliet, Crest Hill, Shorewood & Minooka	17.56	21.95	29.82	1.36	30.42	41.26	1.36	61.68	83.23	1.35
Scenario #4 - Joliet, Romeoville & Shorewood	18.30	22.88	30.91	1.35	30.37	40.79	1.34	58.50	77.91	1.33
Scenario #5 - Joliet, Romeoville, Crest Hill & Shorewood	20.05	25.06	34.12	1.36	33.18	44.97	1.36	61.31	82.09	1.34
Scenario #6 - Joliet, Shorewood, Channahon & Minooka	16.87	21.09	29.11	1.38	29.98	41.12	1.37	62.81	85.39	1.36
Scenario #7 - Joliet, Crest Hill, Shorewood & Channahon	17.30	21.63	29.49	1.36	30.05	40.76	1.36	59.75	80.18	1.34
Scenario #8 - Joliet, Lemont, Crest Hill, Shorewood & Channahon	19.40	24.25	33.94	1.40	33.72	47.00	1.39	63.69	86.88	1.36
Scenario #9 - Joliet, Crest Hill, Shorewood, Minooka, & Channahon	18.62	23.27	32.32	1.39	32.79	45.30	1.38	65.62	89.57	1.36
Scenario #10 - Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon	20.71	25.89	36.77	1.42	36.46	51.54	1.41	69.56	96.27	1.38
Scenario #11 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	24.51	30.64	43.90	1.43	41.96	59.79	1.42	75.06	104.52	1.39
Scenario #12 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon	23.20	29.00	41.07	1.42	39.22	55.25	1.41	69.19	95.13	1.37
Scenario #13 - Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	22.42	28.02	39.45	1.41	38.29	53.55	1.40	71.12	97.82	1.38

Note: It has been assumed that Minimum Day Demand is equal to 80% of the Average Day Demand.
Key:
MGD = million gallons per day



Name

- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-2

Title

Scenario #1 2050 Regional Routing
Joliet & Shorewood

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/1/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

- Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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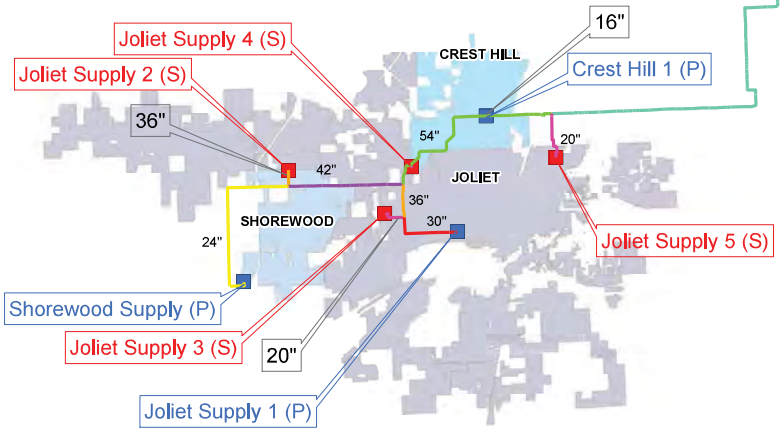

Name

- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-3

Title

Scenario #2 2050 Regional Routing
Joliet, Crest Hill, & Shorewood

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

- Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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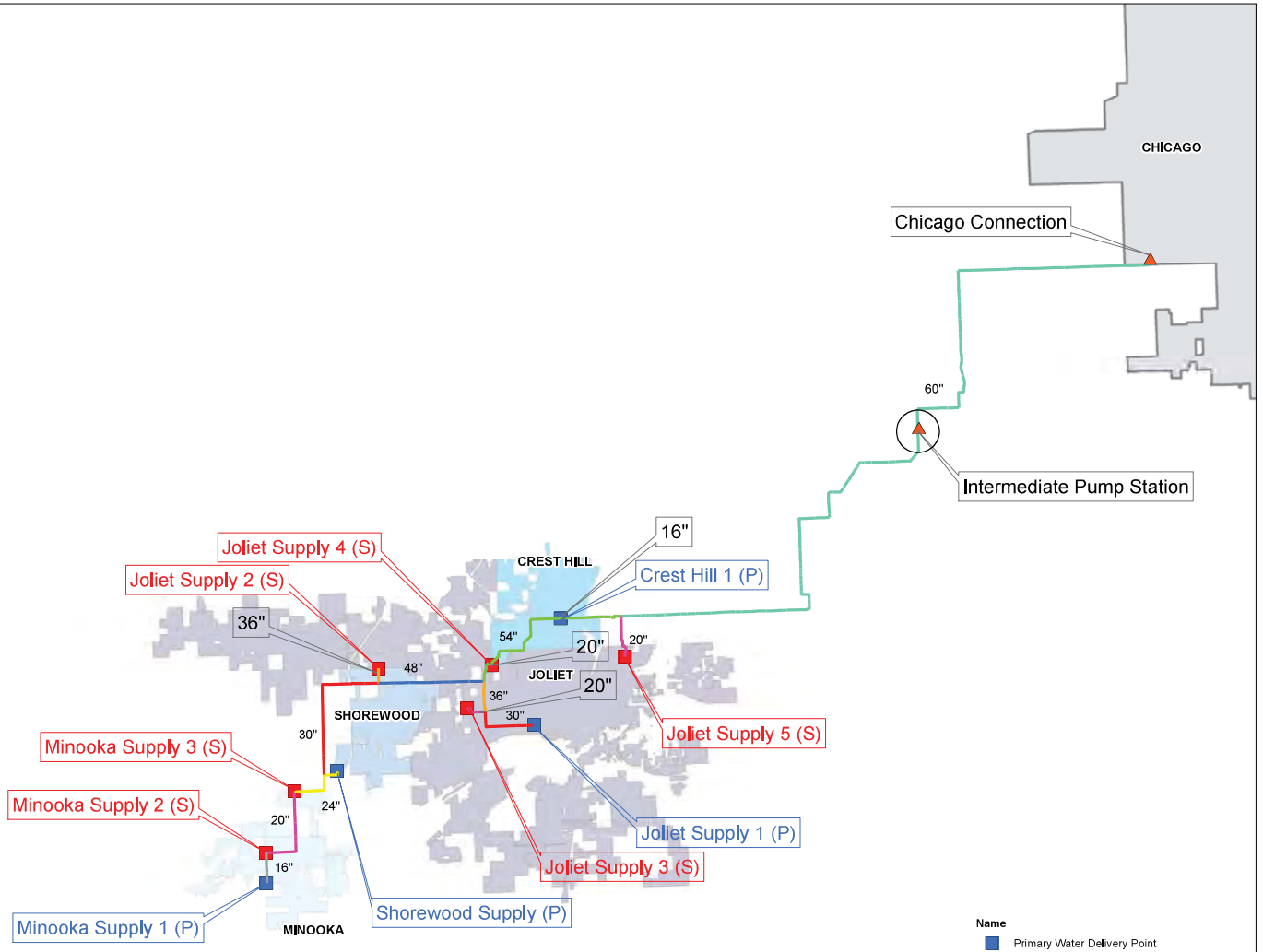

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-4

Title

Scenario #3 2050 Regional Routing
Joliet, Crest Hill, Shorewood, & Minooka

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will and Cook Counties

Prepared by JV on 12/7/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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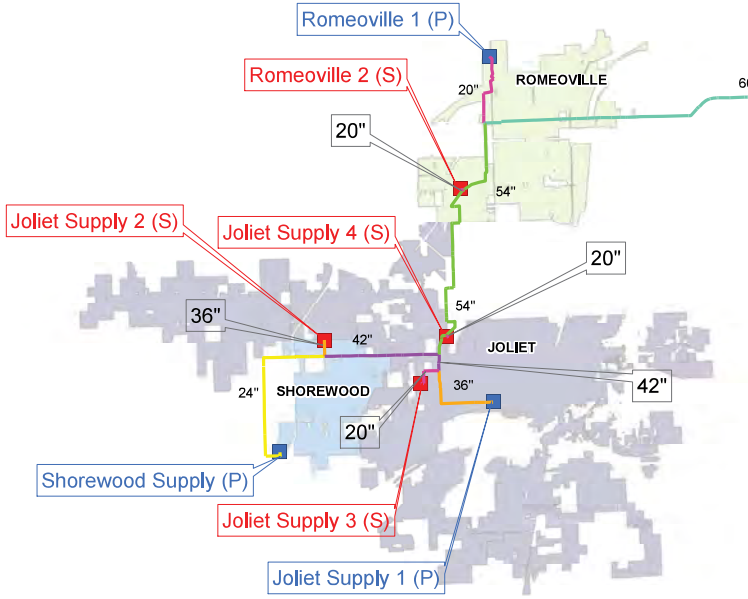

Name

- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-5

Title

Scenario #4 2050 Regional Routing
Joliet, Romeoville, & Shorewood

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 11/29/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

- Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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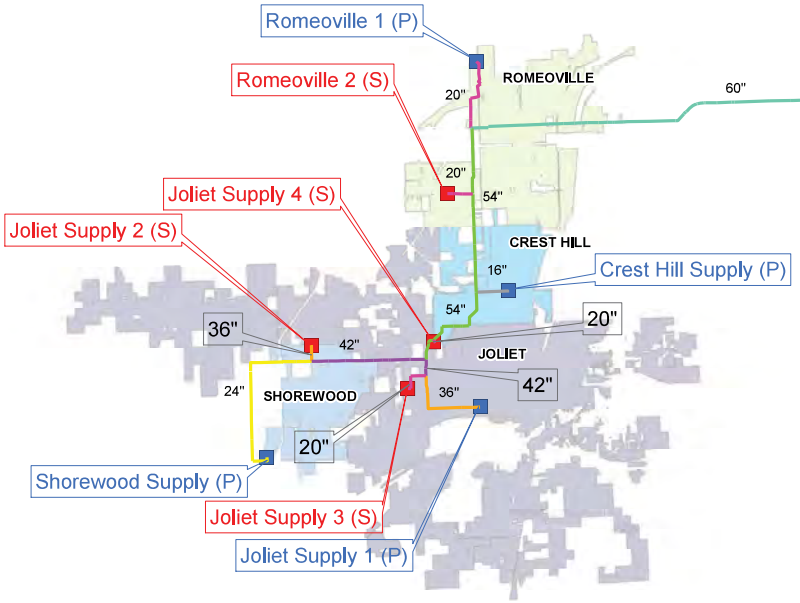

Name

- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-6

Title

Scenario #5 2050 Regional Routing
Joliet, Romeoville, Crest Hill, & Shorewood

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

- Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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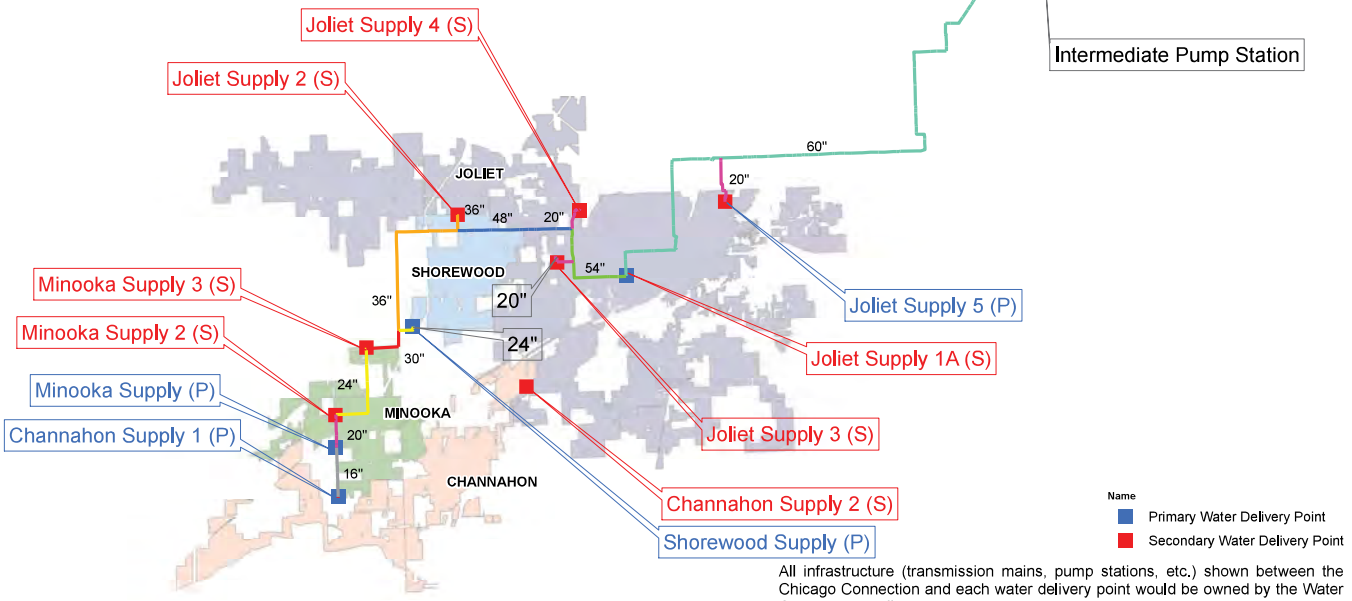

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

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EXHIBIT 2-7

Title

Scenario #6 2050 Regional Routing
Joliet, Shorewood, Channahon, & Minooka

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/1/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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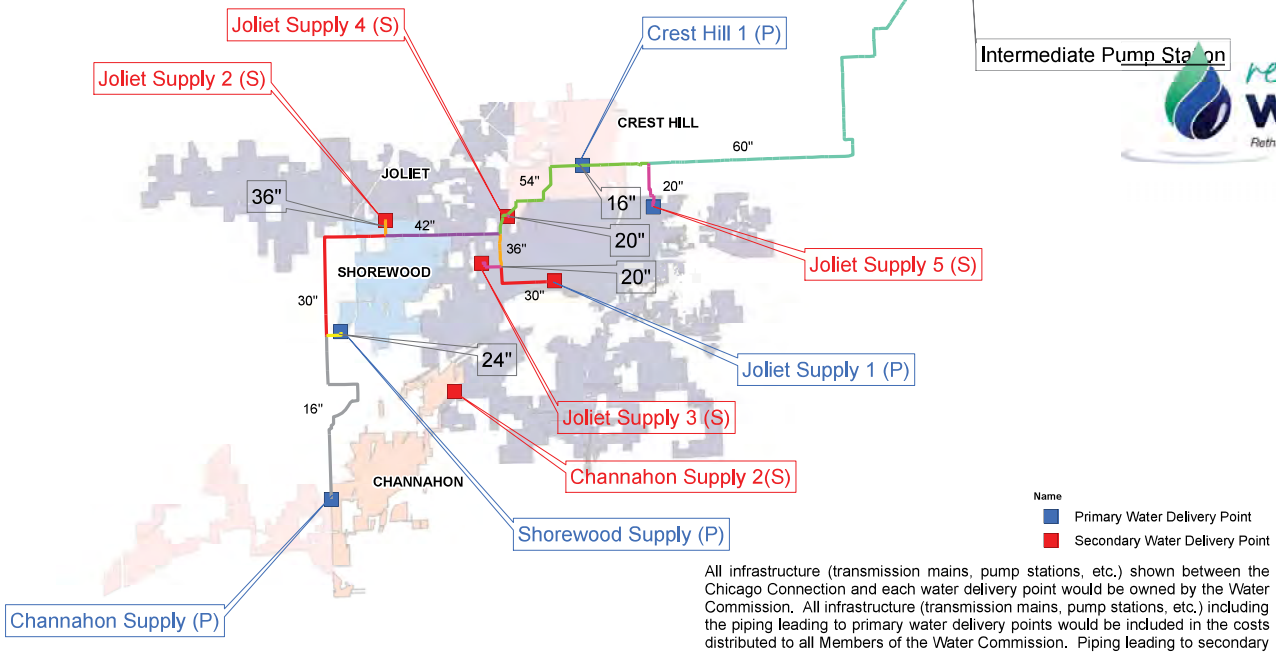

Name
- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-8

Title

Scenario #7 2050 Regional Routing
Joliet, Crest Hill, Shorewood, & Channahon

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Pipe Size
- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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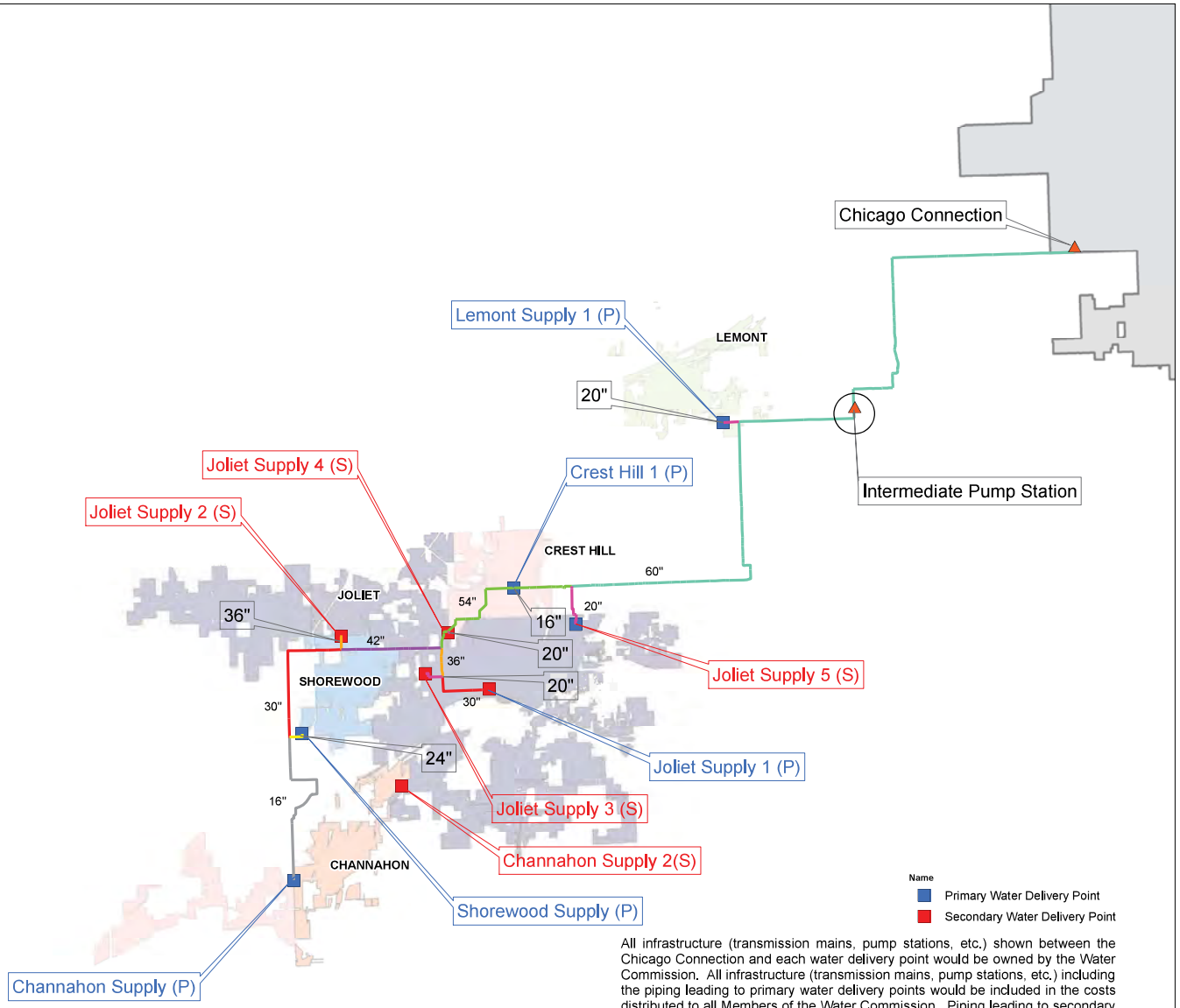

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Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-9

Title

Scenario #8 2050 Regional Routing
Joliet, Lemont, Crest Hill, Shorewood, & Channahon

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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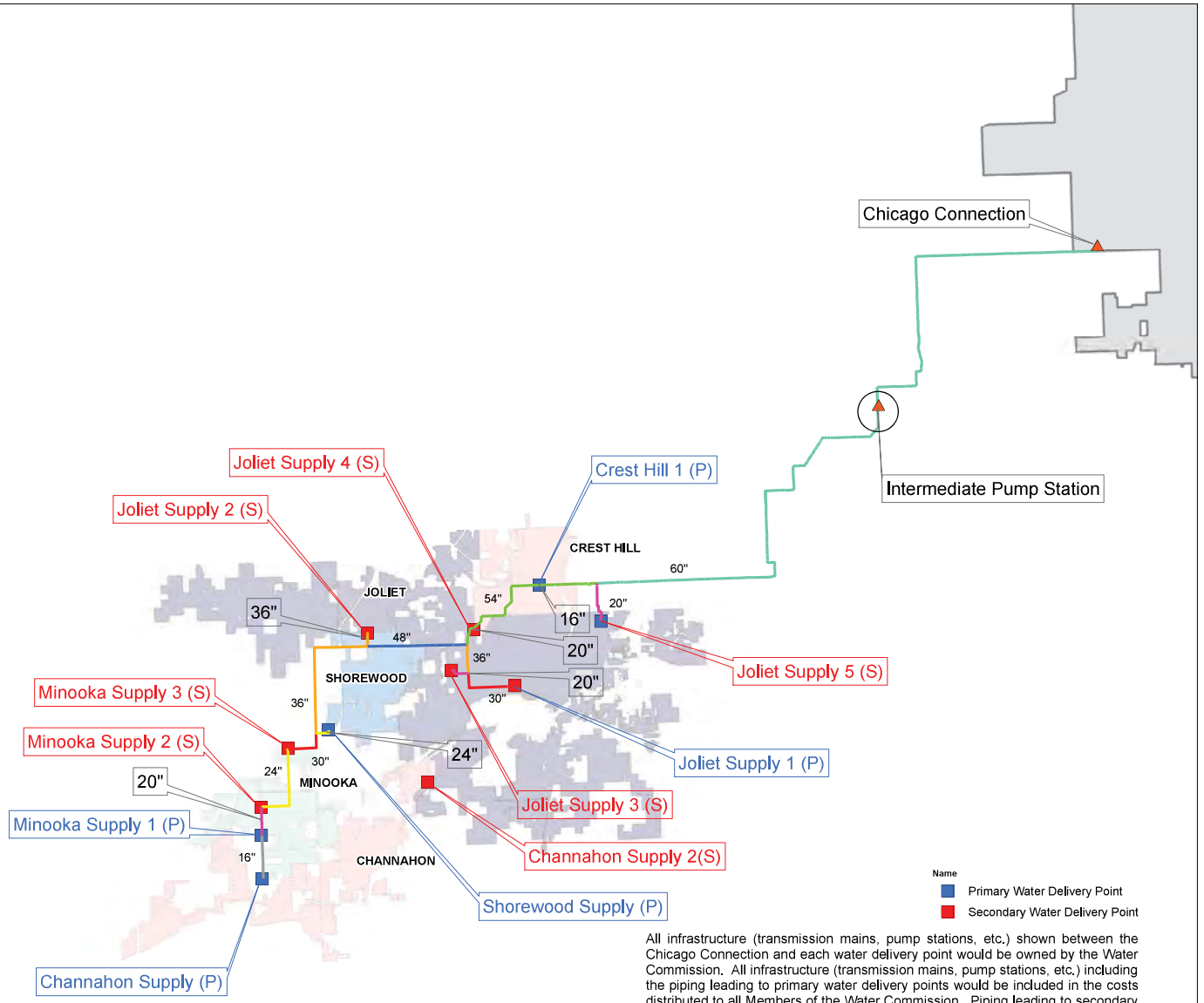

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EXHIBIT 2-10

Title

Scenario #9 2050 Regional Routing
Joliet, Crest Hill, Shorewood, Minooka, & Channaho

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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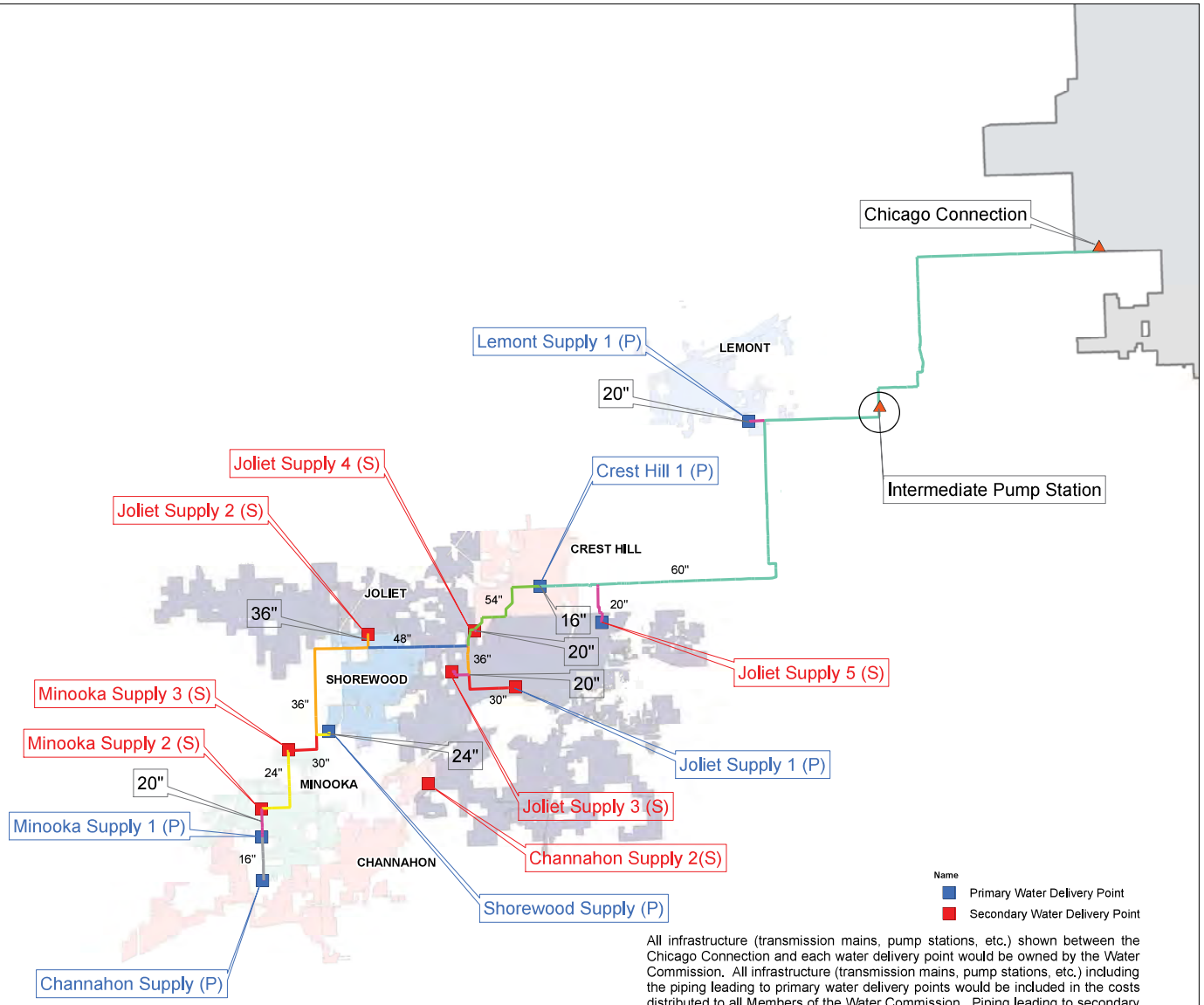

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Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-11

Title

Scenario #10 2050 Regional Routing
Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will and Cook Counties

Prepared by JV on 12/7/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Pipe Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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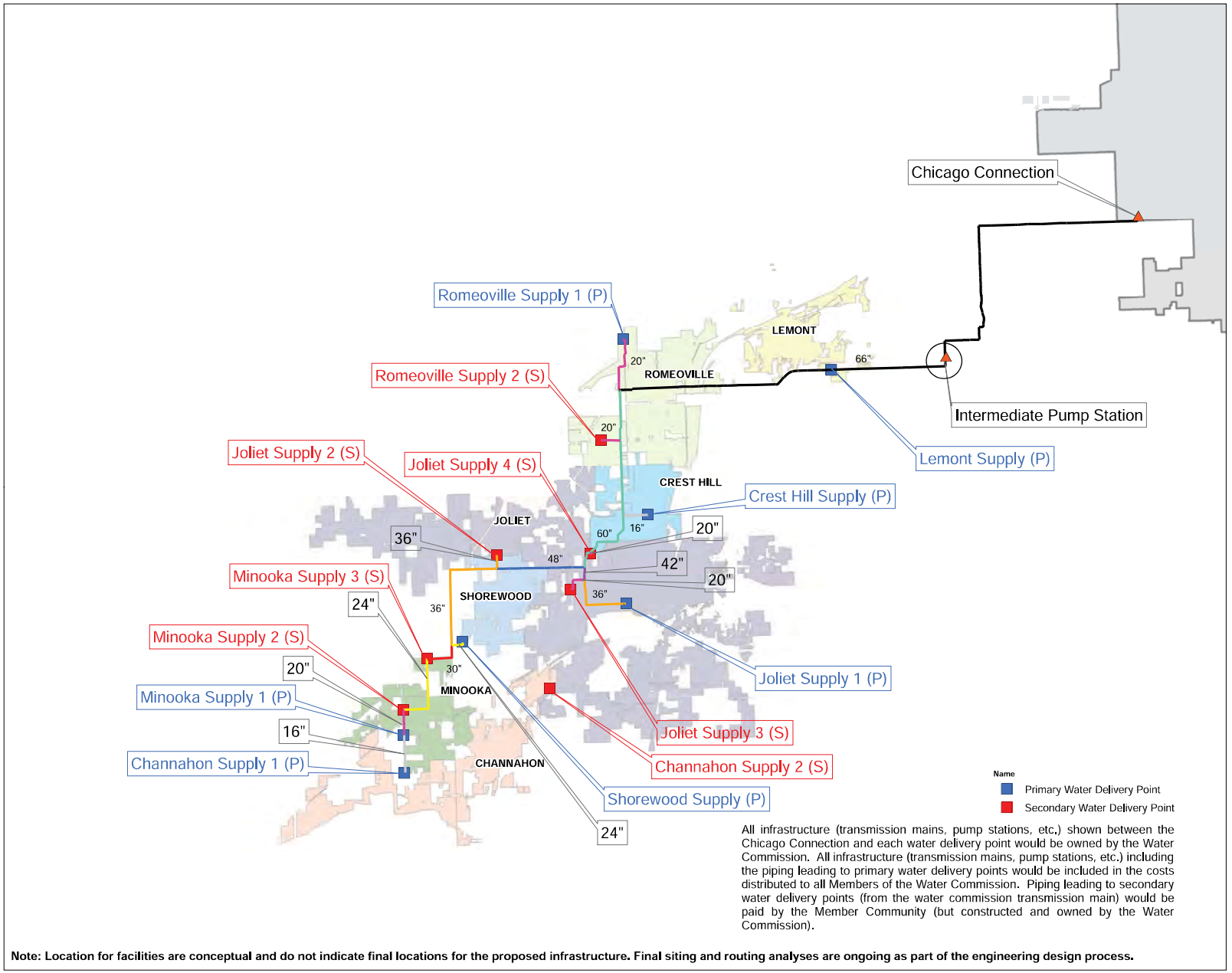

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-12

Title

Scenario #11 2050 Regional Routing
Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka, & Channahon

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Size

16"
20"
24"
30"
36"
42"
48"
54"
60"
66"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/31/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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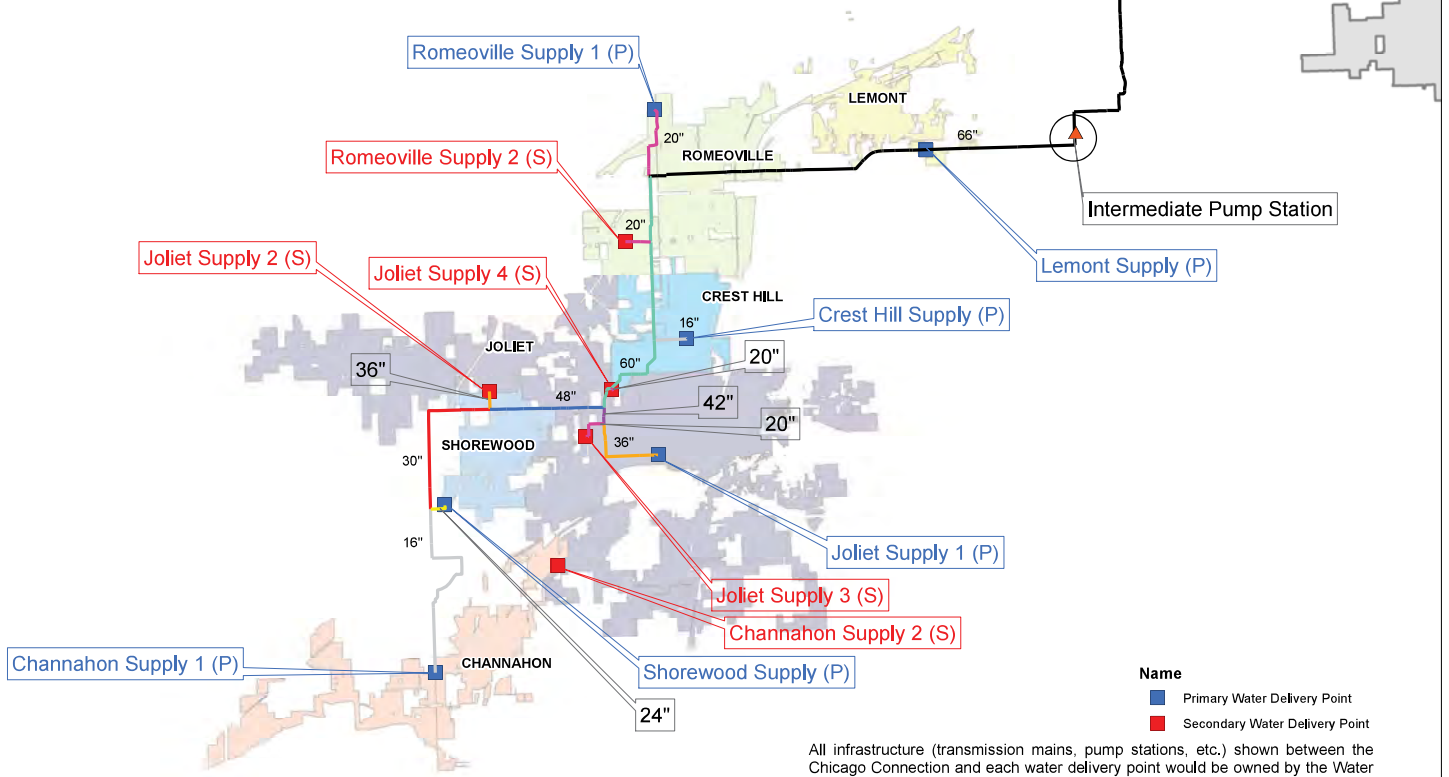

Name

- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

Note: Location for facilities are conceptual and do not indicate final locations for the proposed infrastructure. Final siting and routing analyses are ongoing as part of the engineering design process.

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EXHIBIT 2-13

Title

Scenario #12 ~~2050 Regional Routing~~ Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"
- 66"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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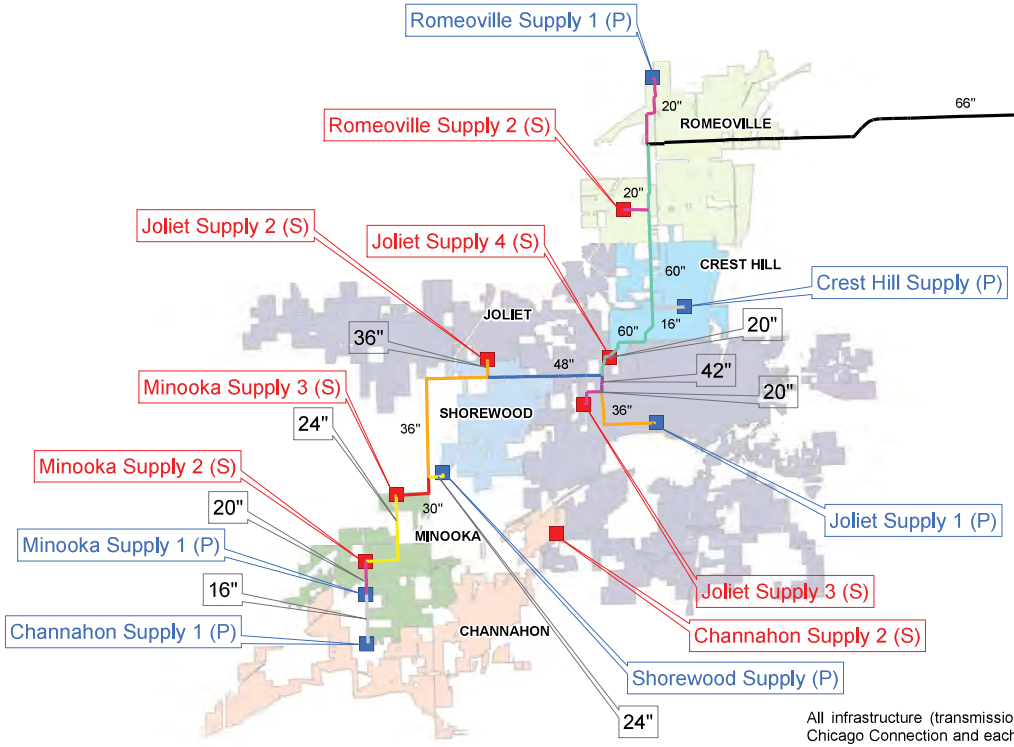

Legend

Name

- Primary Water Delivery Point
- Secondary Water Delivery Point

All infrastructure (transmission mains, pump stations, etc.) shown between the Chicago Connection and each water delivery point would be owned by the Water Commission. All infrastructure (transmission mains, pump stations, etc.) including the piping leading to primary water delivery points would be included in the costs distributed to all Members of the Water Commission. Piping leading to secondary water delivery points (from the water commission transmission main) would be paid by the Member Community (but constructed and owned by the Water Commission).

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EXHIBIT 2-14

Title

Scenario #13 2050 Regional Routing
Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/6/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

Proposed Pump Station

Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"
- 66"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Table 2-6. Conceptual Commission Costs – Regional Scenarios 1 to 6

	Scenario # 1 - Joliet & Shorewood	Scenario #2 - Joliet, Crest Hill & Shorewood	Scenario #3 - Joliet, Crest Hill, Shorewood & Minooka	Scenario #4 - Joliet, Romeoville & Shorewood	Scenario #5 - Joliet, Romeoville, Crest Hill & Shorewood	Scenario #6 - Joliet, Shorewood, Channahon & Minooka
2050 Average Day Demand (MGD)	24.87	27.68	30.42	30.37	33.18	29.98
2050 Maximum Day Demand (MGD)	32.54	36.72	41.26	40.79	44.97	41.12
Chicago Connection Facilities:						
Suction Well	$8,125,000	$8,404,000	$8,706,000	$8,675,000	$8,953,000	$8,697,000
High Service Pump Station	$14,068,000	$14,668,000	$15,320,000	$15,252,000	$15,852,000	$15,299,000
Regional Transmission System:						
Transmission Main	$334,943,984	$323,972,917	$350,599,035	$352,622,095	$338,276,452	$378,445,974
High Service Intermediate Pump Station and Standpipe	$17,457,000	$18,751,000	$20,156,000	$20,010,000	$21,304,000	$20,112,000
4 MG Standpipe and 4 MGD Pump Station	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000
Water Commission Offices	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Primary Member Delivery/Metering Stations	$1,500,000	$2,250,000	$3,000,000	$2,250,000	$3,000,000	$3,000,000
SCADA System	$2,789,000	$2,789,000	$2,789,000	$2,789,000	$2,789,000	$2,789,000
Subtotal	***$384,882,984***	***$376,834,917***	***$406,570,035***	***$407,598,095***	***$396,174,452***	***$434,342,974***
Contingency (25%)	$96,220,746	$94,208,729	$101,642,509	$101,899,524	$99,043,613	$108,585,744
Opinion of Probable Construction Cost	***$481,103,730***	***$471,043,646***	***$508,212,543***	***$509,497,619***	***$495,218,065***	***$542,928,718***
Engineering, Legal & Admin Cost (20%)	$96,220,746	$94,208,729	$101,642,509	$101,899,524	$99,043,613	$108,585,744
Land, Easement & License Cost for Facilities	$4,840,000	$4,840,000	$4,840,000	$4,840,000	$4,840,000	$4,840,000
Total for 2050 System	**$582,164,476**	**$570,092,375**	**$614,695,052**	**$616,237,143**	**$599,101,677**	**$656,354,461**
Total $ per MGD for 2050 System	**$17,890,734**	**$15,525,391**	**$14,898,087**	**$15,107,554**	**$13,322,252**	**$15,961,928**
COMMISSION MEMBER COSTS (Estimated/Conceptual)*						
Joliet	$15,262,000	$17,364,000	$17,364,000	$10,438,000	$10,438,000	$13,782,000
Romeoville	$-	$-	$-	$4,024,000	$5,083,000	$-
Minooka	$-	$-	$2,250,000	$-	$-	$2,250,000
Channahon	$-	$-	$-	$-	$-	$1,125,000

* Costs including Contingencies/Engineering, Legal & Admin Cost for piping and delivery/metering station for non-primary water delivery points.

Key:

MGD =million gallons per day

Note: The costs in this table are budgetary estimates based on the Class 4 guidelines for estimating costs established by the Association for the Advancement of Cost Engineering (AACE) and are in 2020 Dollars. Budgetary estimates will continue to be developed using AACE guidelines. Final costs for the Program will be based on actual expenditures.

Table 2-6. Conceptual Commission Costs – Regional Scenarios 7 to 13

	Scenario #7 – Joliet, Crest Hill, Shorewood & Channahon	Scenario #8 – Joliet, Lemont, Crest Hill, Shorewood & Channahon	Scenario #9 - Joliet, Crest Hill, Shorewood, Minooka & Channahon	Scenario #10 - Joliet, Lemont, Crest Hill, Shorewood, Minooka & Channahon	Scenario #11- Joliet, Lemont, Romeoville, Crest Hill, Shorewood, Minooka & Channahon	Scenario #12 - Joliet, Lemont, Romeoville, Crest Hill, Shorewood & Channahon	Scenario #13 – Joliet, Romeoville, Crest Hill, Shorewood, Minooka & Channahon
2050 Average Day Demand (MGD)	30.05	33.72	32.79	36.46	41.96	39.22	38.29
2050 Maximum Day Demand (MGD)	40.76	47.00	45.30	51.54	59.79	55.25	53.55
Chicago Connection Facilities:							
Suction Well	$8,673,000	$9,088,000	$8,975,000	$9,391,000	$9,940,000	$9,638,000	$9,524,000
High Service Pump Station	$15,248,000	$16,144,000	$15,900,000	$16,795,000	$17,980,000	$17,328,000	$17,084,000
Regional Transmission System:							
Transmission Main	$344,814,758	$349,106,509	$362,085,062	$371,794,033	$399,019,330	$388,895,468	$398,930,349
High Service Intermediate Pump Station and Standpipe	$20,001,000	$21,932,000	$21,406,000	$23,337,000	$25,890,000	$24,485,000	$23,959,000
4 MG Standpipe and 4 MGD Pump Station	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000
Water Commission Offices	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
Primary Member Delivery/Metering Stations	$3,000,000	$3,750,000	$3,750,000	$4,500,000	$5,250,000	$4,500,000	$4,500,000
SCADA System	$2,789,000	$2,789,000	$2,789,000	$2,789,000	$2,789,000	$2,789,000	$2,789,000
Subtotal	***$400,525,758***	***$408,809,509***	***$420,905,062***	***$434,606,033***	***$466,868,330***	***$453,635,468***	***$462,786,349***
Contingency (25%)	$100,131,440	$102,202,377	$105,226,266	$108,651,508	$116,717,082	$113,408,867	$115,696,587
Opinion of Probable Construction Cost	***$500,657,198***	***$511,011,886***	***$526,131,328***	***$543,257,542***	***$583,585,412***	***$567,044,335***	***$578,482,937***
Engineering, Legal & Admin Cost (20%)	$100,131,440	$102,202,377	$105,226,266	$108,651,508	$116,717,082	$113,408,867	$115,696,587
Land, Easement & License Cost for Facilities	$4,840,000	$4,840,000	$4,840,000	$4,840,000	$4,840,000	$4,840,000	$4,840,000
Total for 2050 System	**$605,628,638**	**$618,054,264**	**$636,197,594**	**$656,749,050**	**$705,142,495**	**$685,293,202**	**$699,019,524**
Total $ per MGD for 2050 System	**$14,858,406**	**$13,150,091**	**$14,044,097**	**$12,742,512**	**$11,793,653**	**$12,403,497**	**$13,053,586**
COMMISSION MEMBER COSTS (Estimated/Conceptual)*							
Joliet	$16,214,000	$25,176,000	$17,339,000	$17,339,000	$10,677,000	$10,677,000	$10,677,000
Romeoville	$-	$-	$-	$-	$5,083,000	$5,083,000	$5,083,000
Minooka	$-	$-	$2,250,000	$2,250,000	$2,250,000	$-	$2,250,000
Channahon	$1,125,000	$1,125,000	$1,125,000	$1,125,000	$1,125,000	$1,125,000	$1,125,000

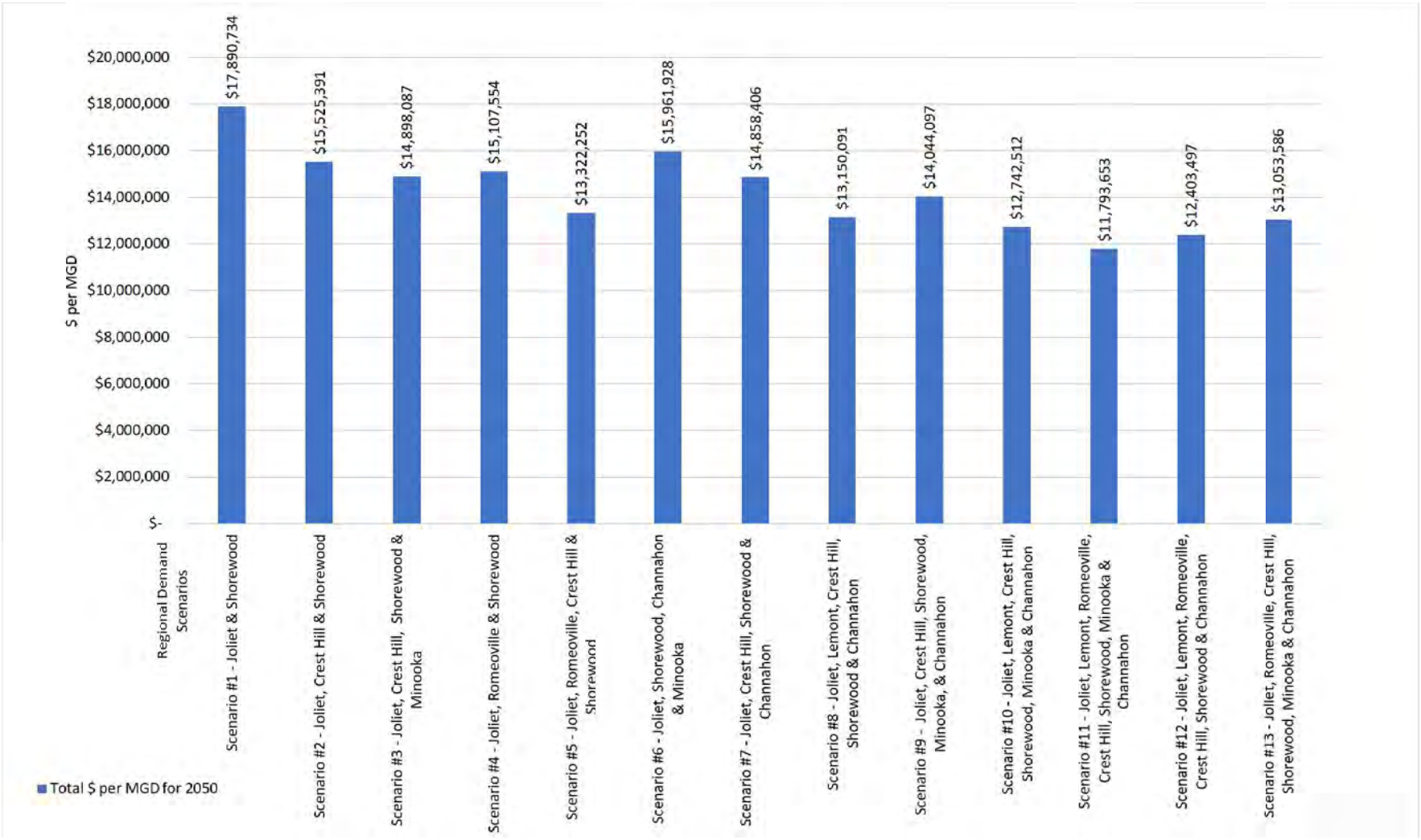
* Costs including Contingencies/Engineering, Legal & Admin Cost for piping and delivery/metering station for non-primary water delivery points.

Key:

MGD =million gallons per day

Note: The costs in this table are budgetary estimates based on the Class 4 guidelines for estimating costs established by the Association for the Advancement of Cost Engineering (AACE) and are in 2020 Dollars. Budgetary estimates will continue to be developed using AACE guidelines. Final costs for the Program will be based on actual expenditures.

Figure 2-1. Regional Water Commission Estimated Capital Costs ($/MGD) for 2050



2.4 Alternative Water Source Program Funding Strategy

A comprehensive strategy for funding is essential to the successful completion of the Alternative Water Source Program and implementation of the RWC system. Early in the process of developing the Program it was determined that a combination of several different funding mechanisms could be used to manage financing and interest costs, limiting the impacts of these costs on water users. The funding strategy adopted for the AWSP includes the use of the following fund sources:

- Water Infrastructure Finance and Innovation Act (WIFIA)
- Drinking Water State Revolving Fund Loan Program (SRF)
- Revenue Bonds

The Program Team is also continuing to track and pursue additional opportunities for external funding of elements of the Program including federal funds designated for specific projects (earmarks), targeted grant funding, and potential funding associated with major infrastructure funding programs.

Current financial forecasts for the AWSP are based on the projected use of major funding mechanisms and associated costs of capital shown in Figure 2-2, with WIFIA being the largest source of funding.

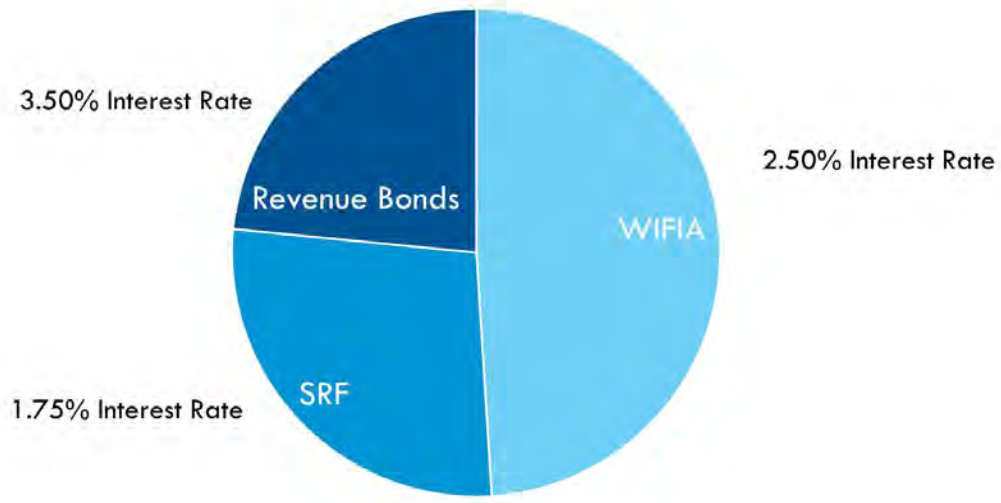


Figure 2-2. Alternative Water Source Program Funding Strategy

This blend of funding sources is projected to provide the RWC with an attractive overall weighted cost of capital for the Program and flexibility in the sculpting of debt repayment. Financial modeling of funding scenarios will continue as details related to overall Program requirements and costs are further defined so that the overall funding strategy maximizes the value and benefits of the available funding sources.

2.5 Basis of Design Regional Scenario

Until the final composition of the Regional Water Commission is known, a single regional demand scenario has been selected for use as the basis for preliminary design efforts currently in progress. Selection of this scenario allows for timely evaluation of critical design criteria and considerations that have the potential to impact plans for implementation of the AWSP system.

The regional demand scenario selected as the basis for the preliminary design efforts is Regional Scenario 11 that assumes the RWC will be made up of seven municipalities including Joliet (with Rockdale as a customer), Channahon, Minooka, Shorewood, Romeoville, Crest Hill, and Lemont. The selection of this regional scenario as the basis of design does not reflect commitments from any of these communities. Rather, the primary factor leading to the selection of this scenario as the preliminary engineering basis of design is the fact that the projected 2050 Maximum Day Demand for the scenario (59.79 MGD) is very close to the 60 MGD value used in previous City of Joliet studies (Phase I, Phase II and 2020 Evaluation) for the analysis of a regional water system scenario. Table 2-7 summarizes the Regional Demand Scenario 11 Minimum Day, Average Day, and Maximum Day Demands that are used as the preliminary engineering basis of design for this analysis. The corresponding AWSP configuration is shown in Exhibit 2-12.

Table 2-7. Regional Water Demands for Preliminary Design: 2030 – 2050 and Build-out

Minimum Day Demand	**2030**	**2035**	**2040**	**2045**	**2050**	**Build-out**
Joliet Demand (MGD)*	13.14	14.17	15.37	16.67	18.10	38.24
Other Regional Partner Demands (MGD)	11.38	12.55	13.54	14.64	15.47	21.81
Total Regional Demand (MGD)	**24.51**	**26.68**	**28.91**	**31.31**	**33.57**	**60.05**
Average Day Demand	**2030**	**2035**	**2040**	**2045**	**2050**	**Build-out**
Joliet Demand (MGD)*	16.42	17.71	19.21	20.84	22.62	47.80
Other Regional Partner Demands (MGD)	14.22	15.64	16.93	18.30	19.34	27.26
Total Regional Demand (MGD)	**30.64**	**33.35**	**36.14**	**39.13**	**41.96**	**75.06**
Maximum Day Demand	**2030**	**2035**	**2040**	**2045**	**2050**	**Build-out**
Joliet Demand (MGD)*	20.36	21.96	23.83	25.84	28.05	59.26
Other Regional Partner Demands (MGD)	23.54	25.62	28.37	30.06	31.75	45.26
Total Regional Demand (MGD)	**43.90**	**47.57**	**52.19**	**55.90**	**59.79**	**104.52**

Note:
* Joliet Demand includes demand for Rockdale
Key:
MGD =million gallons per day

3 City of Chicago Existing Supply and Production Facilities

The intent of this Section is to provide information on the existing Chicago facilities that will be used to provide water service to the RWC. These facilities are all owned, operated, and maintained by Chicago pursuant to the Water Supply Agreement with Chicago.

Treated Lake Michigan water will be supplied to the RWC by the City of Chicago. Raw water will be drawn from Lake Michigan at the 68th Street/ Edward F. Dunne Crib complex located approximately 2.2 miles east of Jackson Park Harbor in Lake Michigan. Lake water will flow from the crib structure to the Eugene Sawyer Water Purification Plant (SWPP) via a 14-foot-diameter tunnel constructed below the bed of the lake. Exhibit 3-1 shows the general location of these facilities.

CDWM proactively assesses risks to the quality of Lake Michigan and evaluates both point and nonpoint sources of contamination. CDWM evaluates nearby industrial sites based on the nature of their site activity, proximity to water intake structures, and discharge permits. Based on this proactive evaluation CDWM is able to increase water quality monitoring where needed and activate a response plan in case of emergencies.

CDWM has in place a 10-step source water Emergency Response Protocol to respond to water quality threats in Lake Michigan. CDWM operates a tugboat modified for water sampling and staffed by professionals ready to deploy to the location of any spill or threat on a 24 hour per day/7 day per week basis. In the event of an emergency, CDWM implements frequent sampling at its water intake and the spill site. Sampling at the spill site is performed in a grid pattern to understand the reach of the spill and quantify the contaminant. Samples collected are analyzed at CDWM's certified laboratories, and results are used to determine any necessary water treatment adjustments (including the need for the addition of powdered activated carbon) to ensure the continuous delivery of safe, high quality drinking water.

CDWM also has the ability to use an independent, shore intake to supply raw water to the SWPP if concerns exist regarding water quality at the Dunne Crib complex. The availability of this shore intake provides redundancy for Chicago's raw water supply.

The SWPP, constructed in 1947, is a 720 MGD conventional surface water treatment plant that uses coagulation, flocculation, sedimentation, filtration, and disinfection processes to produce potable water. Historic data indicates that the water produced at the SWPP is of excellent quality and meets all current state and federal water quality regulations. In addition, CDWM conducts quarterly comprehensive chemical analyses of its source water and treated water, and regularly monitors raw and treated water quality for potential parameters of concern. Past studies have focused on parameters including Endocrine Disrupting Chemicals, Pharmaceuticals & Personal Care Products, Hexavalent Chromium, Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA), and more recently, microplastics. These data have consistently shown Lake Michigan to be a high-quality source for raw water. Where testing has detected contaminants of concern, the levels measured to date have been very low.

Water treated at the SWPP is conveyed to the CDWM's Southwest Pumping Station site through 12-, and 16-foot-diameter tunnels that form the backbone of the City's South Tunnel Systems. The 12-foot-diameter Columbus Avenue/84th Street Tunnel serves as the supply for the Southwest Pumping Station and will also supply the proposed tunnel connection and tunnel extension that will serve the RWC. The general configuration of the tunnel system and location of the Southwest Pumping Station are shown on Exhibit 3-1.

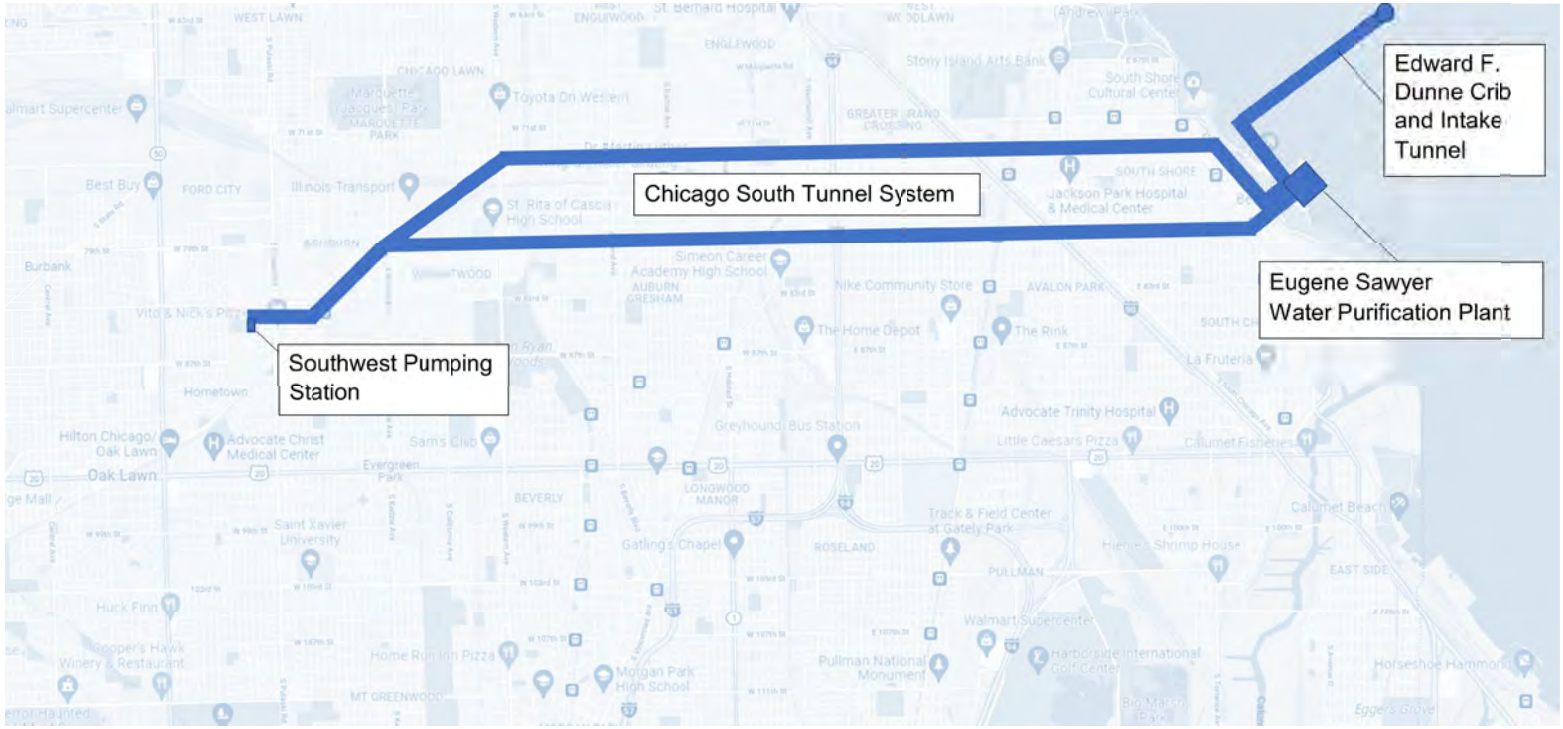


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EXHIBIT 3-1

Title

Water Supply and Production Facilities
City of Chicago

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will, Cook, DuPage, Kendall, Grundy, and LaSalle County, IL.

Stantec | CMT Crawford, Murphy & Tilly | STRAND ASSOCIATES | CORNWELL ENGINEERING GROUP

4 Alternative Water Source Program Hydraulic Basis of Design

4.1 Key Design Principles

The primary function of the RWC water system is to convey treated Lake Michigan water from Chicago to the water delivery points for individual members. Key hydraulic design principles developed for the RWC system include the following:

- The City of Chicago requires that an air gap be created between the CDWM and RWC systems to protect the CDWM system from any potential backflow from the RWC system.
- RWC withdrawals from the CDWM water system, and RWC Member withdrawals from the water transmission system will be maintained at relatively uniform daily rates. The system is not designed to support pump on-demand operations or meet peak hour demand conditions.
- New infrastructure at the Chicago Connection Facilities site (Southwest Pumping Station/Durkin Park site) will be designed to meet the total projected 2050 Maximum Day Demands of the RWC Members while considering space for future equipment upgrades to meet potential build-out demands.
- The proposed Suction Well to be constructed in Durkin Park will be sized to provide the storage volume needed for controlled shutdown of the High Service Pump Station when operating at capacity.
- Transmission system pumping facilities will be designed to maintain minimum operating pressure of 25 psi between the High Service Pump Station and regional water delivery points under all normal operating conditions. Pumping stations required along the transmission main will be designed to meet projected total 2050 Maximum Day Demands of the RWC Members. It is assumed that pumping capacity required to meet build-out demands will be created through an upgrade/expansion of the initial facilities.
- Sizing of the proposed water transmission main from Chicago to the Southwest Suburbs will be based on a design velocity criterion. Transmission main will be sized to maintain a minimum velocity of 1 to 2 feet per second (fps) under 2030 Minimum Day Demand conditions. Under 2050 Maximum Day Demand conditions, velocity will be below a maximum of 7 fps. Additional capacity for meeting projected build-out demands will be achieved through the future upgrade/expansion/addition of pump stations along the water transmission system.
- The proposed standpipe at the Intermediate Pump Station site will be designed to support operation and controlled shut down of the Intermediate Pump Station under 2050 Maximum Day Demand conditions.

- Metering and flow control facilities will be constructed at all water delivery points serving RWC Members. Service pressures to members at the metering facilities will be maintained at a minimum of 25 psi, and members will be required to take water at a generally uniform rate. RWC Members are responsible for adjusting pressure at their delivery points to support operation of their local water distribution networks.

- The RWC system will be operated to provide a free chlorine residual of at least 0.5 parts per million at Member water delivery points. (Note that while provision of a free chlorine residual is currently anticipated, final decisions related to chlorination method and residual level will be dependent upon results of ongoing corrosion control studies and are subject to change.)

- RWC members must provide two times their IDNR Lake Michigan Allocation (i.e., Average Day Demand) in distribution system storage (downstream of water delivery point) to allow for continued operations in the event of a short duration (less than 48 hour) outage from Chicago and/or RWC. No credit will be provided to RWC Members for storage provided within the RWC system. The Preliminary Agreement for water supply with Chicago also requires that commission members maintain an alternate source of supply for use in the event that a loss of service lasts for more than 2 days.

4.2 Transmission Main Sizing

Pipeline velocity is a primary driver for the sizing of the proposed transmission main from Chicago to the Southwest Suburbs. As noted above, the transmission main is sized to keep maximum velocities below 8 fps, and minimum velocities above 1 to 2 fps under 2030 Minimum Day Demand conditions. Based on regional scenario hydraulic modeling performed, anticipated transmission main velocity is approximately 3 to 4 fps under 2050 Maximum Day Demand conditions. Additional capacity for meeting projected Build-out demands will be achieved through the future upgrade/ expansion/addition of pump stations, if necessary.

Table 4-1 shows the range of flows that can be readily conveyed by various sizes of transmission main while meeting the adopted velocity criteria. Based on the preliminary design 2030 Minimum Day Demand and 2050 Maximum Day Demand values of 24.51 MGD and 59.79 MGD, a 66-inch-diameter pipe is planned for the primary segments of the RWC transmission main. Final sizing of the transmission main will be based on these sizing criteria and the declared 2050 Maximum Day Demands of RWC Members.

Table 4-1. Transmission Main Size and Velocity Parameters

Pipe Size (inches)	Assumed Pipe Material	Inside Diameter (inches)		Design Flow (MGD)									
				20	30	40	50	60	70	80	90	100	110
20	DI	20.65	Flow Velocity (ft/s)	13.3	20.0								
24	DI	24.75		9.3	13.9	18.6							
30	DI	30.8		6.0	9.0	12.0	15.0	18.0					
36	DI	36.93		4.2	6.3	8.3	10.4	12.5	14.6	16.6	18.7		
42	PCLCP	42		3.2	4.8	6.4	8.1	9.7	11.3	12.9	14.5	16.1	17.7
48	PCLCP	48		2.5	3.7	4.9	6.2	7.4	8.6	9.8	11.1	12.3	13.5
54	PCCP	54		1.9	2.9	3.9	4.9	5.8	6.8	7.8	8.8	9.7	10.7
60	PCCP	60		1.6	2.4	3.2	3.9	4.7	5.5	6.3	7.1	7.9	8.7
66	PCCP	66		1.3	2.0	2.6	3.3	3.9	4.6	5.2	5.9	6.5	7.2
72	PCCP	72		1.1	1.6	2.2	2.7	3.3	3.8	4.4	4.9	5.5	6.0
78	PCCP	78		0.9	1.4	1.9	2.3	2.8	3.3	3.7	4.2	4.7	5.1
84	PCCP	84		0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4
90	PCCP	90		0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2	3.5	3.9
96	PCCP	96		0.6	0.9	1.2	1.5	1.9	2.2	2.5	2.8	3.1	3.4

Notes:
(1) Pipe materials shown were assumed as the basis for velocity calculations. Final selection of pipe material will be made during detailed design.
(2) Velocity values assume constant inside diameter for pipelines over their useful life.

4.3 Transmission System Hydraulics

4.3.1 Pumping, Storage, and Pressure Requirements

Pumping and storage requirements along the RWC transmission main reflect consideration of the preliminary engineering basis of design flows, ground surface elevations along the proposed transmission main alignment, and the hydraulic design principles related to minimum pipeline operating pressures summarized in Section 4.1. Other hydraulic design criteria used for the current analysis of system hydraulics include:

- Minimum Pipeline Pressure: 25 psi
- Target Maximum Pipeline Pressure: 120 psi (may be exceeded at trenchless crossings and pump station discharges)
- Pipeline Roughness C-factor (2030): 130
- Pipeline Roughness C-factor (Future): 110

Consideration of a lower, future C-factor for the transmission main is important as other regional utilities in northeastern Illinois have experienced instances of C-factor decline resulting from water chemistry-related deposition on the interior of their pipelines. Close coordination with the

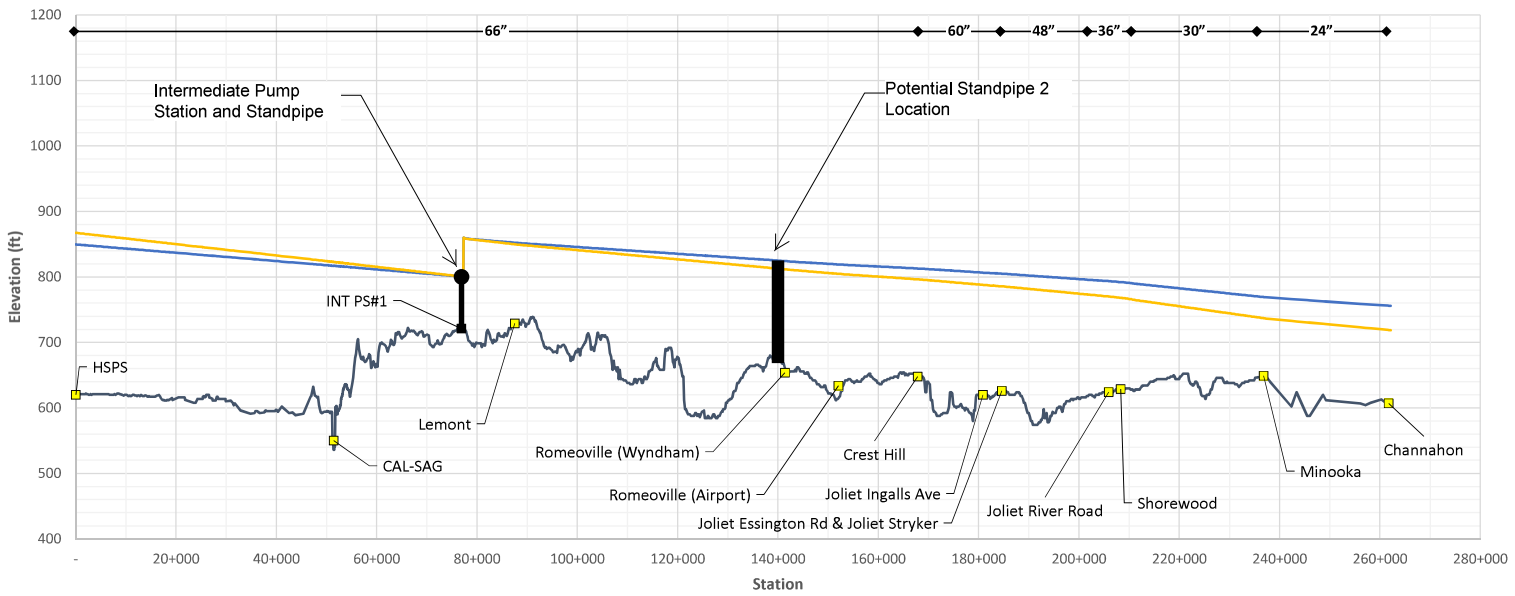
City of Chicago to avoid such problems is anticipated; but given the RWC's limited direct control over water chemistry, sensitivity analyses for a lower, future C-factor (less than 110) are being conducted at this point in the design process.

Exhibit 4-1 shows the projected hydraulic grade line profiles along the current transmission main alignment for the design 2050 Maximum Day Demand conditions. Further analysis of pipeline hydraulics will be performed once the 2050 Maximum Day Demand for the RWC is established. This analysis may result in modifications to certain design parameters including required pumping head and/or storage facility operating levels.

As shown in Exhibit 4-1, ground elevations along the Regional Scenario 11 alignment being used as the current basis of design range from approximately 620 feet above sea level at the point of connection to the Chicago water system near 84th Street and Kedvale Avenue to a high point of approximately 740 feet above sea level west of Bell Road between Lemont and Homer Glen. This high point is about 17 miles from the eastern starting point for the proposed finished water transmission main and establishes the static head that the proposed pumping facilities must overcome. Ground elevations west of this high point vary, but trend downward with elevations at the proposed delivery structures being in the range of about 600 to 650 feet above sea level. The total distance along the transmission main from the Chicago Connection Facilities site to the most distant delivery structure is approximately 50 miles. The total length of Commission pipeline is approximately 59 miles, with 35 miles of transmission main being 60- to 66-inches in diameter. The remaining 24 miles of transmission main will be 48-inches in diameter and smaller.

All of the scenarios considered include a standpipe with an operating level at approximately 800 feet above sea level located at the site of the proposed Intermediate Pump Station. The Standpipe (and the Intermediate Pump Station) will be roughly 14 to 15 miles west of the connection to the Chicago system. The Standpipe will provide volume to support shut-down of pumps at the Intermediate Pump Station in the event of a supply outage and serve to regulate the hydraulic grade line along this portion of the transmission main under all operating conditions.

Initial design conditions for the RWC transmission main system will be defined by the total 2050 Maximum Day Demands declared by RWC Members. For Regional Scenario 11 being used as the current basis of design, the total 2050 Maximum Day Demand is 59.79 MGD. Exhibit 4-1 shows the current design hydraulic grade line along the transmission main system for this demand condition at C-factor values of 130 (new pipe) and 110 (pipe after many years in service). Under this scenario the energy required to convey the flow from the Chicago Connection Facilities site to the delivery points will be provided by the High Service Pump Station adjacent to the RWC system connection with Chicago and the Intermediate Pump Station. The total pumping head and discharge pressure required at the High Service Pump Station under 2050 Maximum Day Demand conditions are estimated to be on the order of 275 feet and 110 psi, respectively, based on a required discharge hydraulic grade line of about 880 feet above sea level. Pumping head and discharge pressure at the Intermediate Pump Station are estimated to be on the order of 60 feet and 65 psi, respectively, based on an assumed ground elevation of approximately 715 feet and a discharge hydraulic grade line of about 865 feet above sea level.



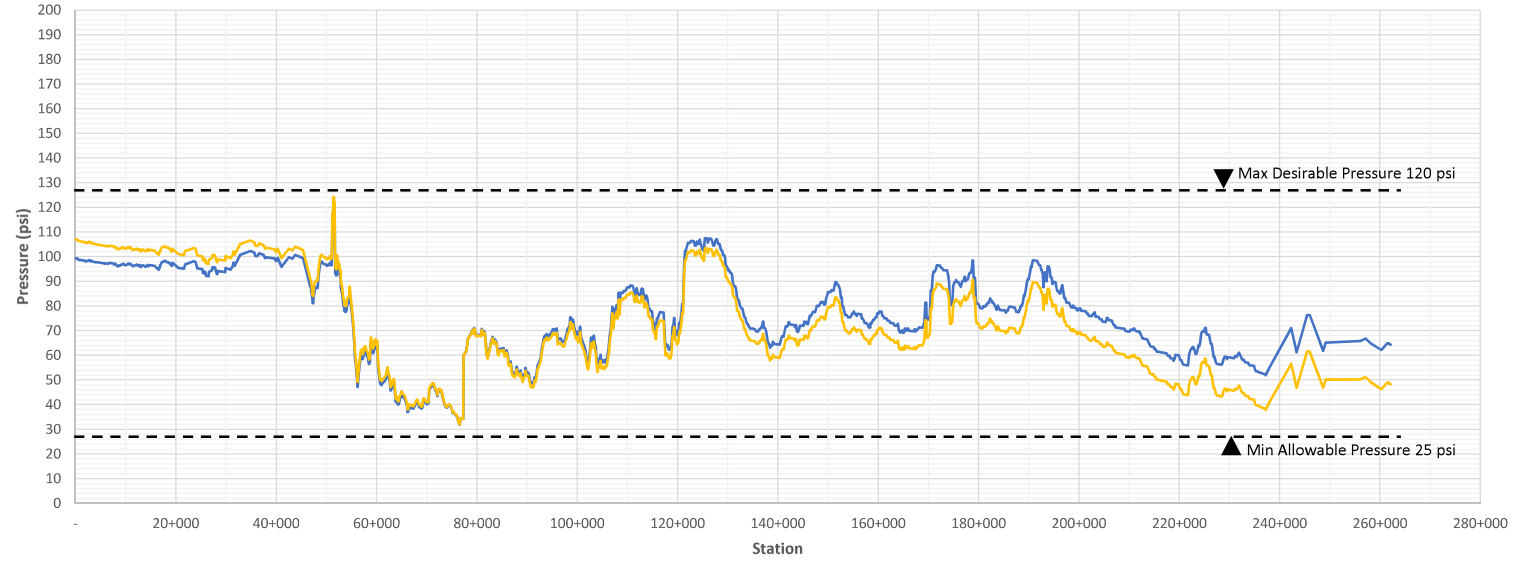


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Exhibit No.
EXHIBIT 4-1

Title
Hydraulic Profile:
2050 Maximum Day Demand Condition
Q = 60.4 MGD

Client/Project
City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will, Cook, DuPage, Kendall, Grundy, and LaSalle County, IL.

Legend

- Ground Elevation
- HGL / Pressure for C = 130
- HGL / Pressure for C = 110
- Lateral Connection to Supply Point
- Standpipe / Intermediate Booster

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4.3.2 Surge Control Requirements

The hydraulic design for the RWC system must also consider the potential impacts of pressure surges or transients associated with the pumping operations on a long water transmission main. Given the configuration of the proposed system, a sudden loss of power at the High Service Pump Station could lead to significant pressure transients, including a potentially damaging down surge. For the purpose of the current design, surge control measures are proposed to protect the integrity of the transmission main pipeline under a surge condition (loss of primary power while operating pumps to meet 2050 Maximum Day Demand). The minimum transient pressure adopted for use in the sizing of surge control facilities for the RWC system is 0 psi. While this value is significantly lower than the minimum design pressure for the system under normal operating conditions, it is still above levels that could potentially pose a threat to the integrity of certain pipeline elements.

Simulations of transient pressures within the RWC system under the 2050 Maximum Day Demand condition indicate that approximately 55,000 gallons of pressurized air chamber volume or equivalent surge control method is needed at or near the High Service Pump Station discharge to protect the transmission main in the event of a power loss that results in a full trip of the operating pumps. As currently contemplated, this storage would consist of pressure vessels equipped with air compressors and connecting piping, designed to allow water to rapidly enter the transmission main in the event of a pump trip so as to mitigate the potential magnitude of the down surge caused by the sudden pump stop. As with the steady state hydraulic analysis, transient analysis of the transmission main system will be updated and revisited once membership in the RWC has been determined.

4.3.3 RWC System Operational Approach

The current concept for operation of the RWC system is based on uniform take of water by Member Communities from the RWC matching the required uniform take by the RWC from Chicago. This concept allows for smaller transmission main, pump station, and storage capacity to accommodate Maximum Day Demand versus Peak Hour Demand. The RWC System operational approach includes the following assumptions:

- RWC will provide CDWM with an anticipated average withdrawal rate on a daily basis to inform CDWM's planning for system operations.
- CDWM will plan pump operations at the Low Service Pump Station based on the RWC estimated daily withdrawal rate.
- RWC will monitor levels in the Suction Well located downstream of the Low Service Pump Station and notify CDWM if a significant adjustment in withdrawal rate is required. High and low level setpoints will be established for the Suction Well, and both RWC and CDWM will be provided with automatic notifications in the event that levels vary outside of the desired range.

- RWC will control pumps at the High Service Pump Station to maintain a generally uniform supply and minimum pressure at the RWC member water delivery points. Flows and upstream pressures at the member delivery/metering structures will be monitored along with tank levels at proposed standpipes along the water transmission main, and the data used to make decisions regarding adjustments in pump speed and operation at both the High Service Pump Station and the Intermediate Pump Station.

- RWC Members will be required to take water at a uniform rate unless there is an emergency such as fire or watermain break. The RWC will operate metering/delivery Station(s), including control of flow to Members. RWC Members will have SCADA access to the flow control valve setting (set by RWC) and flowmeter reading at their delivery points. Daily uniform take rates can be modified by RWC at the request of Members.

- RWC Members will have responsibility for operation of their local water facilities downstream of the water delivery/metering structures so as to meet local expectations for pressure and flow.

5 Chicago Connection Facilities (CIP #1) Basis of Design

5.1 Proposed Capital Improvement

5.1.1 Improvement Function

New infrastructure is required to establish a connection between the existing City of Chicago water system and the proposed RWC finished water transmission main. This infrastructure, referred to collectively as Capital Improvement Project #1, CIP #1, or the Chicago Connection Facilities, will be constructed on land south of the City of Chicago's Southwest Pumping Station and west of the pumping station site in Durkin Park. The Chicago Connection Facilities will enable the RWC to draw water from Chicago's South Tunnel system and pump it through the new transmission main to the Southwest Suburbs.

5.1.2 Improvement Components

The Chicago Connection Facilities will be constructed adjacent to the City of Chicago's existing Southwest Pumping Station located near the intersection of 84th Street and Kedvale Avenue. Specific components that make up the Chicago Connection Facilities are listed in Table 5-1. Exhibit 5-1 shows a conceptual layout of the proposed Chicago Connection Facilities (Capital Improvement Project #1) improvements.

The City of Chicago will provide land for the Meter Vault, Suction Well, and High Service Pump Station to be owned and operated by the RWC through a permanent easement. The City of Chicago and the Chicago Park District will each provide temporary easements to the RWC for use during construction of the Chicago Connection Facilities. Payments for easements from Chicago and the Chicago Park District will be made by Joliet, on behalf of the planned RWC, following execution of the final water supply agreement and will be based on appraisals and negotiations conducted in accordance with all applicable federal and state requirements (such as the Uniform Relocation Assistance and Real Property Acquisition Act).

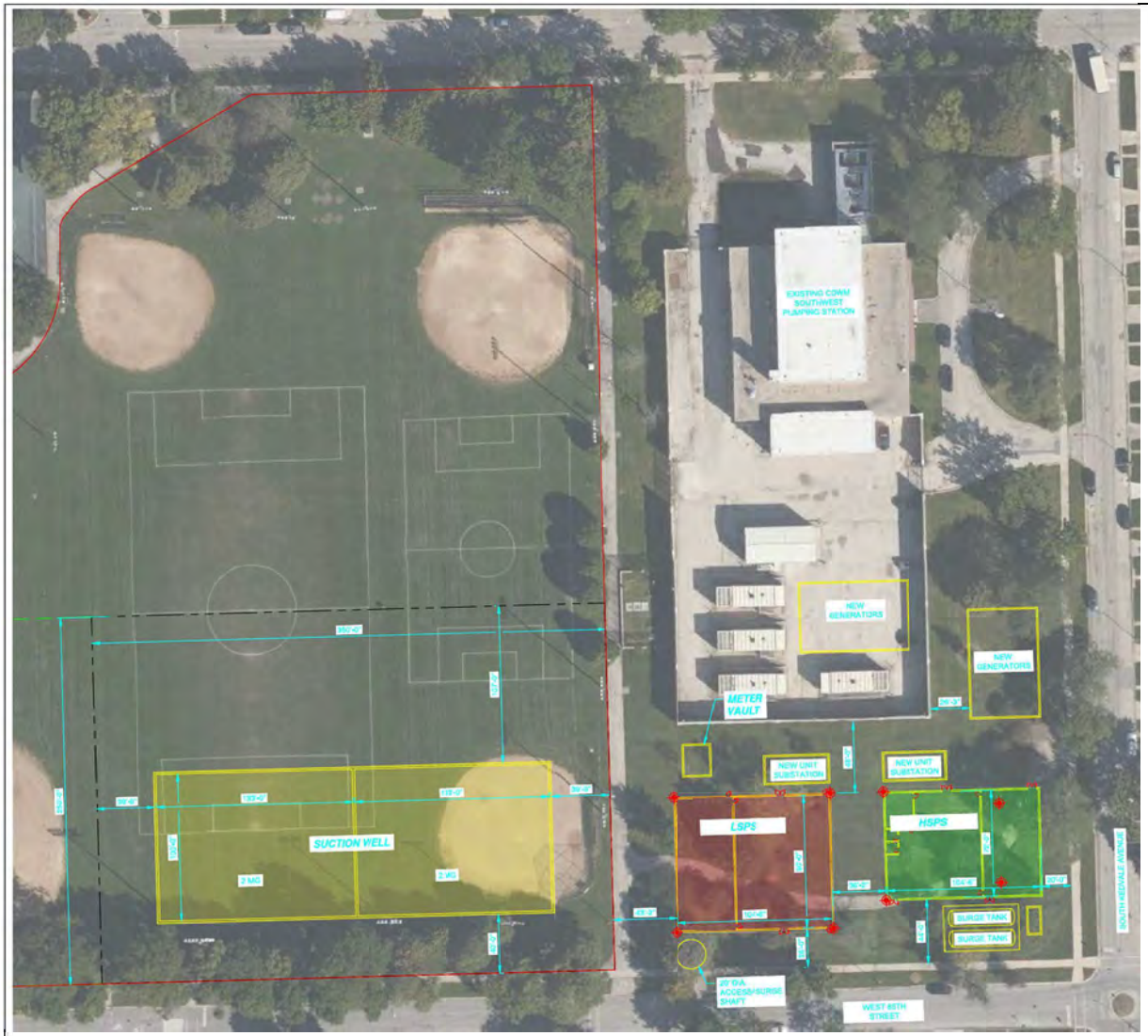
Joliet, on behalf of the planned RWC, will also pay $1.5 million upon execution of the final water supply agreement with the City of Chicago for improvements to other neighborhood parks in the general vicinity of Durkin Park. This payment is intended to support near-term enhancements to nearby parks that can be used by the community while Durkin Park is impacted for Suction Well construction. As with the easement payments, this amount will be included in the accounting of Commission development costs paid by Joliet for which Joliet will receive reimbursement from the RWC.

Table 5-1. Chicago Connection Facilities (Capital Improvement Project #1)

Component	Description	Responsibility
Tunnel Connection	New connection between existing tunnel shaft north of the existing Southwest Pumping Station and the new Tunnel Extension	• Design, Construction, Ownership, Financing, Operation by CDWM
Tunnel Extension	New Tunnel Extension from the Tunnel Connection to the new Low Service Pump Station	• Design, Construction by RWC* • Ownership, Financing, Operation by CDWM
Low Service Pump Station	Pump station to lift water from the new Tunnel Extension to the Suction Well Reservoir	• Design, Construction by RWC* • Ownership, Financing, Operation by CDWM
Chicago Service Valve	A new valve outside and downstream of the Low Service Pump Station, which will serve as the point of demarcation between CDWM-owned and RWC-owned facilities	• Design, Construction by RWC* • Ownership, Financing, Operation by CDWM
Meter Vault	Meter facilities for measuring water pumped by the Low Service Pump Station to RWC	• Design, Construction, Ownership, Financing, Operation by RWC*
Suction Well	Suction Well Reservoir to provide storage and support pump operations	• Design, Construction, Ownership, Financing, Operation by RWC*
High Service Pump Station	Pump station to convey water from the Suction Well into transmission system for delivery to RWC	• Design, Construction, Ownership, Financing, Operation by RWC*

Note:
*Joliet to have responsibility for design and construction engineering on behalf of RWC as Program Manager.

Key:
CDWM = Chicago Department of Water Management
RWC = Regional Water Commission



SCALE: 1"=40'

Revision	By	Appd	YYYY.MM.DD

Issued	By	Appd	YYYY.MM.DD

PRELIMINARY NOT FOR CONSTRUCTION

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CMT

EXHIBIT 5-1

ALTERNATIVE WATER SOURCE PROGRAM CHICAGO CONNECTION FACILITIES

Joliet, Illinois

File name: EXHIBIT_ATTACHMENTS A AND [illegible]

Dwn. | Dsgn | Chkd. | YYYY.MM.DD

Project No.	Scale
173440124	AS SHOWN
Revision Sheet of	Drawing No.

5.2 Key Design Considerations

5.2.1 Design Flow and Capacity

The proposed Chicago Connection Facilities will be designed, constructed, and equipped to supply the projected total 2050 Maximum Day Demand for the RWC Members. However, as space available for future construction adjacent to Chicago's Southwest Pumping Station is limited, consideration will be given during the design process to provisions for upgrade of the facilities to meet potential future demands.

5.2.2 Fundamental Design Principles

Design principles for the Chicago Connection Facility are described below. These principles reflect design criteria contained in the 2020 Basis of Design Report, updated during the course of preliminary design efforts, and submitted to, reviewed by, and approved by the City of Chicago in a 10% Basis of Design document. While these principles will govern the overall design efforts, certain design details and preferences for components that will be owned by Chicago (Tunnel Extension, Low Service Pump Station, Service Valve) are still being defined and negotiated and may change as design efforts progress.

5.2.2.1 Tunnel Connection

A new connection to Chicago's South Tunnel System must be constructed to create a supply point for the RWC. The connection is anticipated to be made to an existing shaft near the north end of the Southwest Pumping Station as shown in Exhibit 5-1. Due to the configuration of the tunnel supply to the pump station, this connection will have to be made while the existing tunnel remains in service.

Given the sensitive nature of this construction relative to operation of the Chicago South Tunnel System and the Southwest Pumping Station, Chicago will design and construct the new Tunnel Connection. Detailed design criteria for the Tunnel Connection will be developed by Chicago's design consultant. Joliet's AWSP design team will communicate with Chicago's consultant throughout the design process to coordinate design for the Tunnel Connection and Tunnel Extension.

5.2.2.2 Tunnel Extension

Approximately 700 to 800 feet of new tunnel will be required to convey flow from the new Tunnel Connection to the proposed Low Service Pump Station south of Chicago's Southwest Pumping Station. Based on available data, it is anticipated that the Tunnel Extension will be constructed in rock at a depth of approximately 115 feet below grade and lined with concrete or pipe to provide the required finished diameter. The final depth and construction requirements for the tunnel extension will be developed following completion of geotechnical field investigations at the site.

As shown in Exhibit 5-1, two shafts (one at the north end of the site and one at the south end of site) will be required along the Tunnel Extension to allow for changes in alignment and to support construction. A sluice gate is anticipated to be installed on the east side of the north shaft to allow for isolation of the Tunnel Extension and the RWC system from Chicago's South Tunnel System, if necessary.

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering for the proposed Tunnel Extension. Chicago will finance the construction of the Tunnel Extension. Ownership, operation, and maintenance responsibility for the Tunnel Extension will be transferred to CDWM upon completion of construction and start-up/ commissioning.

5.2.2.3 Low Service Pumping Station, Chicago Service Valve and Meter Vault

Vertical pump shafts will be constructed to connect the Tunnel Extension to the proposed Low Service Pump Station. Vertical turbine pumps will be installed in the shafts to lift the water from the tunnel and convey it to the Suction Well which will be constructed in Durkin Park, west of the existing Southwest Pumping Station site.

As shown in Exhibit 5-1, flow from the Low Service Pump Station to the Suction Well will pass through the Chicago Service Valve that will serve as the point of demarcation between Chicago-owned and RWC-owned facilities. The rate and volume of water purchased from Chicago by the RWC will be measured in a metering vault located downstream of the Chicago Service Valve and upstream of the Suction Well. The Meter Vault will be a below grade concrete vault housing flow meters owned and maintained by the RWC. The vault will include parallel piping with a meter and isolation valves on each segment to allow for full flow through a single line while the other line is out of service for maintenance. Data from the Metering Vault will be viewable by both the RWC and Chicago.

Joliet, as Program Manager on behalf of RWC, will be responsible for the design and construction engineering of the proposed Low Service Pump Station, Chicago Service Valve and Metering Vault. CDWM will finance the construction of the Low Service Pump Station. Ownership and operating responsibility for the Low Service Pump Station will be transferred to CDWM upon completion of construction and start-up/commissioning. The station will be designed for unmanned operation. The RWC will retain ownership of and responsibility for maintenance of the Metering Vault as well as all of the transmission main downstream of the Chicago Service Valve.

Key criteria that will serve as the basis for final design of the Low Service Pump Station are summarized in Table 5-2. As noted above, these criteria reflect items contained in the 10% Basis of Design document reviewed and approved by the City of Chicago. Final design details may be adjusted as design proceeds based on Chicago preferences, building code requirements, and site zoning constraints.

Table 5-2. Key Design Criteria: Low Service Pump Station

Design Parameter	Design Parameter Value
Design Capacity (MGD)	59.79 (2050 Maximum Day Demand)*
Design Head (feet)	(To be determined once Chicago confirms tunnel hydraulic)
Pump Type	Vertical Turbine
Motor Control	Variable Frequency Drive
No. of Pumps, Pump Redundancy	4, N+1
Pump Capacity (MGD)	19.93**
Flow Metering	Master magnetic flow meter
Piping and Valve Velocity (ft/s)	5 to 8
Pump Removal Method	Overhead Gantry Crane
Electrical Equipment	(To be determined once Chicago confirms tunnel hydraulics)
Primary Power Supply	Two new electrical service feeds
Backup Power	Generators w/ Automatic Transfer Switch sized for 2050 Average Day Demand
SCADA Architecture (for Commission)	PLC-based control w/ gigabit fiber optic ethernet network
SCADA Local Interface	Yes
Chicago Security Requirements	Real-time video surveillance and access control w/ local server
Restroom	Gender-neutral with toilet and sink
Building Materials	
Foundation	Cast-in-place Concrete
Exterior Walls	CMU Block w/ Masonry Brick
Interior Walls	Glazed CMU Block
Roof System	Bar Joist with Metal Deck
Interior Ceilings – General	Exposed Roofing System
Interior Ceilings – SCADA Room	Suspended Tile

Notes:
* This is dependent on commission membership and will be equal to the total of all members Declared 2050 Maximum Day Demand.
** To be adjusted based on design capacity but will approximately equal design capacity divided by 3.

Key:
CMU = Concrete Masonry Unit
ft/s = feet per second
MGD = million gallons per day
SCADA = Supervisory Control and Data Acquisition

5.2.2.4 Suction Well

As shown in Exhibit 5-1, flow from the Low Service Pump Station will discharge through an air gap downstream of the meter vault and into the proposed Suction Well to be constructed within Durkin Park immediately west of the Southwest Pump Station site. The City of Chicago has negotiated provisions for transfer of this portion of the park from the Chicago Park District and will grant a permanent easement to the RWC for construction, operation, and maintenance of the Suction Well with provisions for continued use of the land area over the reservoir by the Chicago Park District through a lease between Chicago and Chicago Park District. Joliet will pay Chicago for this easement (following execution of the final water supply agreement) and will receive credit from the RWC in the determination of Joliet's future capital and debt service payments.

The Suction Well is intended to provide 4 MG of water storage capacity to support flexible pump operations and controlled shut down of the High Service Pump Station in the event of an outage at the Low Service Pump Station. The Suction Well is not intended to provide emergency storage capacity to sustain High Service Pump Station operations in the event of an extended CDWM supply outage. Reserve storage designed to provide supplemental supply capacity for the RWC during an extended CDWM outage is proposed to be concentrated within the RWC Members' distribution systems where it is available even if there were to be a failure that shut down the transmission main between Chicago and the RWC delivery/metering stations to each member.

Suction Well storage volume will be provided in a below-grade, multi-cell structure constructed of cast-in-place, reinforced concrete. A dividing wall between the cells will allow one of the cells to be taken off-line for maintenance without impacting operation of the other cell(s). The final configuration of the suction well, including the number of separate cells to be constructed, will be defined during detailed design. The maximum water depth for the suction well is planned to be 20 feet.

To balance the need for a positive overflow from the proposed Suction Well with the Chicago Park District's desire for continued use of the full park area, it is assumed that the top slab of the Suction Well and overflow piping will extend above existing grade but will be covered with soil and a restored recreational surface, currently contemplated to be a junior-sized artificial turf soccer field but subject to change based on further discussion between Chicago Park District and local community groups. All hatches and appurtenances for the Suction Well will be located along the south edge of the structure outside of the soccer field limits.

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering of the proposed Suction Well. The RWC will finance, own, operate, and maintain the Suction Well.

5.2.2.5 High Service Pump Station

As shown in Exhibit 5-1, a new High Service Pump Station will be constructed just south of Chicago's Southwest Pumping Station to pump water from the Suction Well to the RWC Members. Site piping will convey water from the Suction Well to a wet well beneath the High Service Pump Station. Vertical turbine pumps will draw water from the wet well and discharge it to the RWC transmission main. The station will be designed for unstaffed operation.

An automated water quality monitoring panel will be installed in the High Service Pump Station to monitor quality characteristics of the treated water supplied to the RWC by the City of Chicago. The panel will be fed by a water sample tap located in the meter vault downstream of the Chicago Service Valve.

As discussed in Section 4.3.2, surge control measures anticipated to include 55,000 gallons of compressed air surge tank volume will be installed at the High Service Pump Station to mitigate pressure transients that could result from a sudden loss of power and shut down of the high service pumps. Final design volumes for the surge tanks will be refined after the RWC Members have been identified and final design flows established.

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering of the proposed High Service Pump Station. The RWC will design, construct, finance, own, operate and maintain the proposed High Service Pump Station.

Key criteria anticipated to be the basis for final design of the High Service Pump Station are summarized in Table 5-3. As noted previously, these criteria reflect items contained in the 10% Basis of Design document reviewed and approved by the City of Chicago. Final design details may be adjusted as design proceeds based on Chicago building code requirements and site zoning constraints.

Table 5-3. Key Design Criteria: High Service Pump Station

Design Parameter	Design Parameter Value
Design Capacity (MGD)	59.79 (2050 Maximum Day Demand)*
Design Head (feet)	275 (To be confirmed based on final hydraulics)
Pump Type	Vertical Turbine
Motor Control	Variable Frequency Drive
No. of Pumps, Pump Redundancy	6, N+1
Pump Capacity (MGD)	11.96**
Flow Metering	Magnetic flow meter
Piping and Valve Velocity (fps)	5-8
Pump Removal Method	Removable Skylights/Outside Crane
Surge Control Design Condition	Power loss at 2050 Maximum Day Flow
Surge Control System	55,000-gallon Compressed Air Surge Tank
Electrical Equipment	4160 V
Primary Power Supply	New electrical service (dual feed)
Backup Power	Generators w/ Automatic Transfer Switch sized for 2050 Average Day Demand
SCADA Architecture (for Commission)	PLC-based control w/ gigabit fiber optic ethernet network
SCADA Local Interface	Yes
Security Provisions	Real-time video surveillance and access control w/ local server
Restroom	Gender-neutral with toilet and sink
Building Materials	
Foundation	Cast-in-place Concrete
Exterior Walls	CMU Block w/ Masonry Brick
Interior Walls	Glazed CMU Block
Roof System	Bar Joist with Metal Deck
Interior Ceilings – General	Exposed Roofing System
Interior Ceilings – SCADA Room	Suspended Tile

Notes:
* This is dependent on commission membership and will be equal to the total of all members Declared 2050 Maximum Day Demand.
** To be adjusted based on design capacity but will approximately equal design capacity divided by 5.

Key:
ATS = Automatic Transfer Switch
CMU = Concrete Masonry Unit
MGD = million gallons per day
PLC = programmable logic controller
SCADA = Supervisory Control and Data Acquisition

6 Transmission Main (CIP #2, #6, #7) Basis of Design

6.1 Proposed Capital Improvement

6.1.1 Improvement Function

Water transmission main is required to establish a connection between the proposed Chicago Connection Facilities and RWC Member delivery points in the southwest suburbs. At its northeastern end, the transmission main will be supplied with water from the Chicago Connection Facilities High Service Pump Station constructed adjacent to Chicago's existing Southwest Pumping Station near the intersection of 84th Street and Kedvale Avenue. Details of the Chicago Connection Facilities are described in Section 5.

As shown in Exhibit 6-1, the RWC transmission system is currently estimated to include a total of approximately 59 miles of pipeline (35 miles of 60-inch and 66-inch diameter main and 24 miles of additional smaller diameter transmission main extending to the water delivery points for all of the RWC members). For the purpose of this document, the configuration of the transmission main is assumed to be the Regional Scenario 11 configuration shown previously in Exhibit 2-8. The final configuration of the transmission main system may change once final commitments to the RWC are made by potential members.

6.1.2 Improvement Components

RWC Transmission Main components are listed in Table 6-1. Transmission main includes a 66-inch-diameter pipeline between the Chicago Connection Facilities and the branch to the first RWC member delivery point. Transmission main beyond this point will include additional 66-inch and 60-inch diameter transmission main as well as smaller diameter transmission main.

Routing and alignment studies for the RWC transmission main are ongoing as part of the preliminary design. Efforts are being made to locate the transmission main in public rights-of-way, wherever possible as part of the preliminary design. Based on the current level of design, it is anticipated that the final transmission main installation will require a mix of open cut and trenchless construction methods. Open cut construction, with a minimum bury depth of 5 feet, (unless site conditions and permitting allow for a shallower bury depth) is expected to be the predominant method of pipeline installation, but trenchless installation will be required at some locations including railroads, waterways, major county or state routes, high traffic intersections, and complex crossings. Complex crossings along the proposed alignment are noted in Exhibit 6-1 and are anticipated to include:

- Tri-State Tollway (I-294) Crossing
- Cal-Sag Channel Crossing
- Veterans Memorial Tollway (I-355) Crossing
- Des Plaines River/Sanitary and Ship Canal/I&M Canal Crossing
- I-55/DuPage River Crossing
- I-80 Crossing

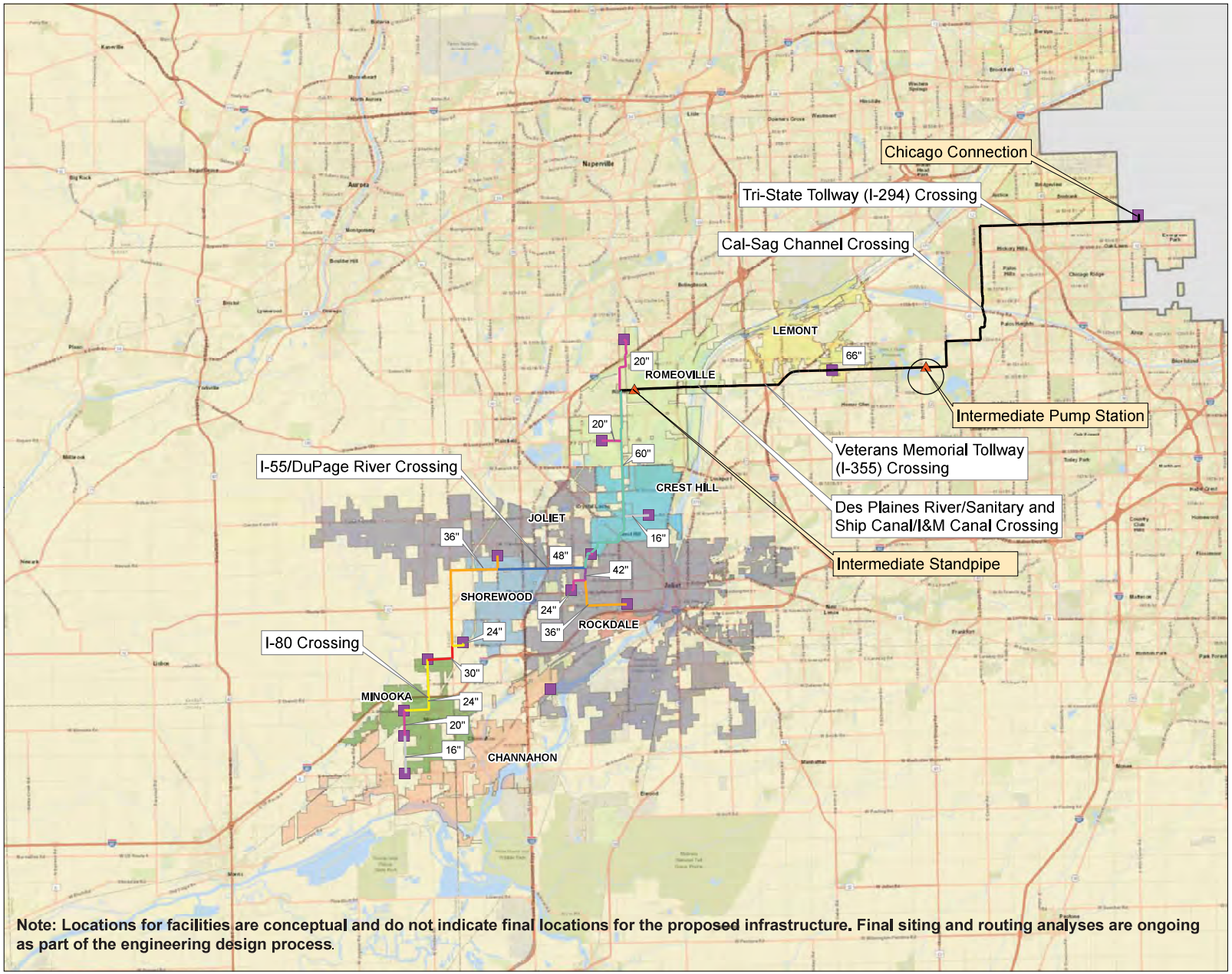

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EXHIBIT 6-1

Title

Regional Water Commission
Water Transmission System

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will and Cook Counties

Prepared by JV on 12/23/2021

N

0 2 4 8 Miles

(At original document size of 22x34)
1 Inch = 10000 Ft

Legend

- Proposed Pump Station
- Delivery Point

Size

- 16"
- 20"
- 24"
- 30"
- 36"
- 42"
- 48"
- 54"
- 60"
- 66"

Location Map: Not to Scale

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: WILL CO., COOK CO., IDOT, INDOT, INDNR and USFWS DATA DOWNLOADED FROM WEB 3/11/2019 to 8/26/2019
3. Background Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Stantec CMT Crawford, Murphy & Tilly

STRAND ASSOCIATES CORNWELL ENGINEERING GROUP V3

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Table 6-1. Transmission Main Components

Component	Description
Transmission Main	Pipeline to convey finished water. Possible materials for 66-inch diameter transmission main include prestressed concrete cylinder pipe (PCCP) and steel. Ductile iron pipe will be considered for smaller diameter pipe as conditions warrant.
Isolation Valves	Butterfly valves to isolate sections of the transmission main for maintenance and repair. Direct bury w/ structures for access to valve operators
Air Release Valves	Valves to release trapped air, primarily at high points or long vertical runs of pipe. Valves to be installed in pre-cast structures
Access Ports	Hatches to allow access to pipe for maintenance. Structures will be required to house the access ports.
Blow Off/Flushing Valves	Valves provided at low points to flush debris from transmission main. Blow-off valves will be installed in pre-cast structures to allow for operation of the valve and access to the drain connection.
Thrust Restraint	Restrained joint pipe will be used as the primary means for managing thrust forces on the pipeline. Structural provisions for exterior thrust restraint will be considered where necessary.

6.2 Key Design Considerations

6.2.1 Design Flow and Capacity

As noted in Section 4 of this summary the RWC transmission main is sized to supply 2050 Maximum Day Demands while satisfying maximum velocity criteria (Maximum velocity < 8 fps) and allowing for efficient operation of the transmission main system. The hydraulic criteria presented in Section 4 will also be used to develop sizing for the smaller diameter segments of transmission main once the RWC Members are known.

6.2.2 Fundamental Design Principles

The proposed RWC transmission main will be designed based on consideration of:

- System Hydraulics (minimum/maximum velocity and pressure)
- Protection of treated water quality
- Structural Requirements (pipe strength to accommodate internal pressure as well as external loadings associated with depth of bury or site conditions)
- Construction Requirements (especially related to complex crossings)
- Operation and Maintenance
- Protection from Damage and Deterioration

These considerations will be applied consistently in the design of all RWC water transmission main. However, final alignments and pipe sizing decisions will depend upon the final RWC membership. Select transmission main design criteria are summarized in Table 6-2.

Table 6-2. Key Design Criteria: Transmission Main

Design Parameter	Design Parameter Value
Design Velocity – Minimum for 2030 Minimum Day Demand (fps)	1.0 to 2.0
Design Velocity – Maximum (fps)	8.0
Design C-factor (2030)	130
Design C-factor (Future)	110
Transmission Main Maximum Pressure (psi)	120 (Except at trenchless crossings and near pump station discharges)
Transmission Main Minimum Pressure (psi)	25
Pipeline Material	Prestressed Concrete Cylinder Pipe (PCCP), AWWA 304 Steel Pipe, AWWA C200 with cement mortar lining Ductile Iron Pipe (DIP), AWWA C150 with cement mortar lining
Minimum Pipeline Depth of Bury (ft)	5**
Isolation Valve Spacing*	1 per mile
Air Release Valve Spacing*	At high points or long vertical runs of pipe. (Assumed spacing 1 per ½ mile for estimating costs)
Access Port Spacing*	1 per 2 miles
Blow Off/Flushing Valves*	At low points to flush debris from transmission main. (Assumed spacing 1 per ½ mile for estimating costs)

Note:
*Final spacing may be more or less than assumed based on final transmission main alignment.
**Conditions in certain segments of the transmission main alignment may allow for installation at cover depths less than 5 feet

Key:
fps = feet per second
psi = pounds per square inch

6.2.3 Key Design and Cost Estimating Assumptions

To establish an appropriate basis for estimating the cost of the required RWC transmission main improvements, segments along the route were classified according to one of ten typical construction types as listed below:

- Open Cut – Low Density
- Open Cut – Medium Density
- Open Cut – High Density Urban
- Open Cut – High Density Arterial
- Open Cut – High Density/Special Excavation
- Open Cut – Utility Corridors
- Open Cut - Trails
- Minor Crossings
- Railroad Crossings
- Major Crossings (Underpass, Viaduct, Interstate Bore and Jack, Minor Waterway Crossing, Wetland Crossing, Advanced Railroad Crossing)

Descriptions and typical cross sections for each of the typical construction types are described in detail in the *Basis of Design, Attachment D, Water Transmission Systems* document developed in December 2020. General assumptions related to transmission main design include:

- Maximum trench width is the pipe outside diameter plus 36 inches (18-inches on either side of the pipe)
- Typical depth of bury to top of the pipeline between 5 feet and 7.5 feet, depending on location
- Excess spoils hauled off-site
- Saw cutting included
- Sidewalk/curb restoration included
- Temporary paving, if needed for traffic control, not included
- Appurtenances (valves, air-release valves, blow-offs, vaults) are accounted for as separate line items and not included in per lineal foot pipe costs for pipe diameters above 36” diameter

- 20 feet to a 25 feet wide easement for utility and low density plus temporary easement. (Not considered necessary for medium and high-density typical sections likely to be constructed within local right-of-way)

Contingency items included in the basis of design for water transmission system construction are intended to reflect costs associated with undeveloped detail (items expected to be part of the project but not explicitly incorporated into the unit costs for various construction types) and with reasonable risk factors related to aspects of the project that are not known at this stage of design. Examples of items that are assumed to be covered by the contingency include:

- Temporary pavement if needed for traffic control
- Reasonable levels of additional restoration or infrastructure costs required to obtain permitting approval by local municipalities
- Increased cost due to proximity to other pipelines if in a utility corridor
- Additional costs for pipe excavation, backfill, and restoration if a deeper pipe depth of bury is required at certain sections of the alignment
- The cost of managing reasonable amounts of found contaminated soil in excess of the amount assumed in the unit costs for the various construction types
- Assumptions for additional private parcels, easements, and licensing costs
- Unknown subsurface conditions (poor soils, unexpected rock, high groundwater, etc.) conditions

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering of the proposed Transmission Main extending from the Chicago Connection Facilities to all Member delivery points. The RWC will construct, finance, own, operate, and maintain the entire transmission main system between the Chicago Connection Facilities and the RWC member water delivery structures. RWC Members that require more than one water delivery point will be responsible for the cost of transmission main and delivery structure improvements beyond those associated with the primary water delivery point.

7 Intermediate Pump Station (CIP #3) Basis of Design

7.1 Proposed Capital Improvement

7.1.1 Improvement Function

Due to the total length and ground profile of the proposed RWC transmission main, an Intermediate Pump Station and Storage Facility are required to boost the flow and maintain pressure between the Chicago Connection Facilities and RWC Member delivery/metering stations under certain demand conditions. The storage facility will regulate pressure on the suction side of the pump station and provide supplemental water for station shut down in the event of a loss of upstream supply.

As shown previously in Exhibit 6-1, the Intermediate Pump Station and Storage Facility will be located along the water transmission main approximately 15 to 16 miles south and west of the Chicago Connection Facilities. Efforts are currently in progress to identify suitable sites for the facility.

Table 7-1 lists the major components of the Intermediate Pumping Station and Storage Facility.

Table 7-1. Intermediate Pump Station Facility Components

Component	Description
Standpipe	1.5 MG standpipe. Capacity of storage tank sized to allow for a sequenced shutdown of pumps. Height of standpipe will be defined based on final hydraulics established after determination of the final design flow for the system.
Intermediate Pump Station	New pump station with horizontal split case pumps, expandable to build-out capacity.
Chemical Feed Facilities	Sodium hypochlorite facilities will be provided to boost chlorine residual if needed. Use of an orthophosphate is being evaluated as part of a corrosion control study currently being conducted and could potentially be fed at this pumping station.
Standby Generators	Two generators combined will accommodate powering pumps to meet Average Day Demand
Bypass Piping	Piping at the site will be configured to allow flow to bypass the pump station, standpipe, or both. This arrangement will maximize operational flexibility and allow for system operation during required maintenance.

Key:
MG = million gallons

7.2 Key Design Considerations

7.2.1 Design Flow and Capacity

The Intermediate Pump Station will be sized for the 2050 Maximum Day Demand for the RWC system. Consideration will be given to the availability of land to allow for future expansion of the facility, if needed, to meet water demands beyond 2050.

The 1.5 MG volume of the standpipe at the Intermediate Pump Station site is based on the volume of water required to allow for controlled shut down of the station in the event of an upstream supply outage. This volume is based on the current design flows for the system and may be revised once the final design capacity for the RWC system is determined.

7.2.2 Fundamental Design Principles

It is anticipated that the Standpipe located at the Intermediate Pump Station site will be constructed of welded steel and will include separate inlet and outlet piping to facilitate turnover of the stored water. The water level in the standpipe will be monitored via a pressure transducer in the adjacent piping and reported via the RWC Supervisory Control and Data Acquisition (SCADA) system.

The Intermediate Pump Station will be designed to serve as a booster pumping station within the RWC water transmission system. Exhibit 7-1 shows a conceptual floor plan for the Intermediate Pump Station taken from the 2020 Basis of Design. This layout is currently being modified as part of the preliminary design effort. When necessary, the Intermediate Pump Station will be operated to boost pressure in the transmission main segments leading to RWC Member water delivery points. Transmission main piping at the Intermediate Pump Station site will be designed to include a bypass for use during demand periods when operation of the Intermediate Pump Station is not required. Bypass piping will also be provided to allow for operation of the transmission main and pump station when the standpipe is out of service for maintenance or painting.

Select design criteria for the Intermediate Pump Station are summarized in Table 7.2. Select design criteria for the Standpipe at the Intermediate Pump Station site are summarized in Table 7.3. Design flows, required pump heads, and standpipe elevations may change following determination of the final RWC membership and resulting total of 2050 Declared Maximum Day Demands.

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering of the proposed Intermediate Pump Station and Storage Facility. The RWC will finance, own, operate, and maintain the Intermediate Pump Station and Storage Facility.

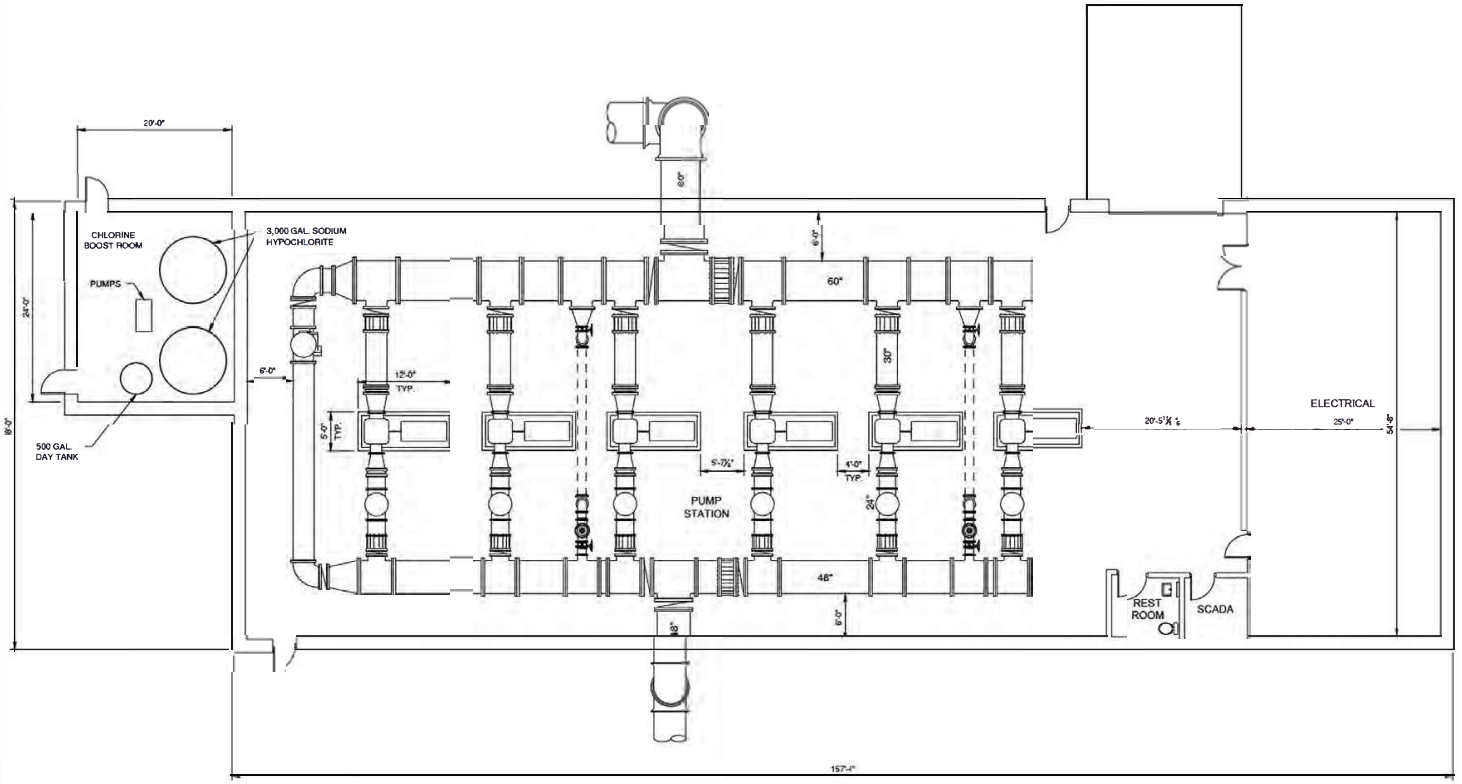

EXHIBIT 7-1
60 MGD INTERMEDIATE PUMP STATION FLOOR PLAN

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EXHIBIT 7-1

Title
60 MGD INTERMEDIATE PUMP STATION CONCEPTUAL FLOOR PLAN

Client/Project
City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will, Cook, DuPage, Kendall, Grundy, and LaSalle County, IL. Lake County, IN

Prepared by MR & MB on 2019-08-09
TR by NJS on 2019-09-03
IR Review by TJJ on

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(At original document size of 11x17)
1/16" = 1'-0"

Legend

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Table 7-2. Key Design Criteria: Intermediate Pump Station

Design Parameter	Design Parameter Value
Design Capacity – Pump Station (MGD)	59.79 (2050 Maximum Day Demand)*
Design Head (feet)	60 (to be confirmed based on final hydraulics)
Pump Type	Horizontal Split Case
Motor Control	Variable Frequency
No. of Pumps, Pump Redundancy	6, N+1
Pump Capacity (MGD)	11.96**
Piping and Valve Velocity (fps)	3 to 5 (Suction), 5 to 8 (Discharge)
Pump Removal Method	Truck Loading Bay w/ Overhead Crane and Hoist
Chemical Feed	20’ x 24’ Room for potential Sodium Hypochlorite feed and chlorine analyzer Additional room for potential Orthophosphate feed
Electrical Equipment	Medium Voltage (may be reduced to 480 V depending on final hydraulics)
Primary Power Supply	New electrical service
Backup Power	Generator w/ Automatic Transfer Switch sized for 2050 Ave Day
SCADA Architecture (for Commission)	PLC-based control w/ gigabit fiber optic ethernet network
SCADA Local Interface	Yes
Security Provisions	Real-time video surveillance and access control w/ local server
Restroom	Gender-neutral with toilet and sink
Building Materials	
Foundation	Cast-in-place Concrete
Exterior Walls	CMU Block w/ Masonry Brick
Interior Walls	Glazed CMU Block
Roof System	Flexicore Panels
Interior Ceilings - General	Exposed Roofing System
Interior Ceilings – SCADA Room	Suspended Tile

Notes:
* This is dependent on commission membership and will be equal to the total of all members’ Declared 2050 Maximum Day Demand.
** To be adjusted based on design capacity but will approximately equal design capacity divided by 5.

Key:
ATS = Automatic Transfer Switch
CMU = Concrete Masonry Unit
MGD = million gallons per day
PLC = programmable logic controller
SCADA = Supervisory Control and Data Acquisition

Table 7-3. Key Design Criteria: Intermediate Pump Station Standpipe

Design Parameter	Design Parameter Value
Design Capacity (MG)	1.5 (Subject to change based on final demands and hydraulics)
Design Overflow Elevation (ft)	800 feet above mean sea level*
Approx. Ground Elevation (ft)	720 feet above mean sea level*
Height to Overflow (ft)	80*
Material of Construction	Welded Steel

Notes:
* All elevations are dependent upon final system hydraulics and will be refined after the 2050 Maximum Day Demand is determined.

Key:
MG = million gallons

8 Intermediate Standpipe and Auxiliary Pump Station (CIP #4) Basis of Design

8.1 Proposed Capital Improvement

8.1.1 Improvement Function

Preliminary hydraulic analyses of the Regional Scenario 11 system configuration have indicated that a second Intermediate Standpipe will be required along the RWC transmission main downstream of the Intermediate Pump Station. This Intermediate Standpipe will serve to stabilize pressures in the downstream portion of the transmission system and provide stored water to supplement flow to the transmission system during a brief (2 to 3 hour) outage at the Intermediate Pump Station.

Based on the current assumed RWC configuration, the proposed Intermediate Standpipe would be located about 26 miles south and west of the Chicago Connection Facilities in the vicinity of Romeoville as shown in Exhibit 6-1. The location shown is conceptual and will be further evaluated with Member Communities during final design.

8.1.2 Improvement Components

It is currently anticipated that infrastructure at this site will include a new 4 MG Standpipe and an adjacent 4 MGD Auxiliary Pump Station as listed in Table 8-1. Water levels in the Standpipe will "float" on the hydraulic grade line in the water transmission main. The Auxiliary Pump Station will be designed to pump water out of the Standpipe and into the transmission main system if necessary. It is anticipated that the Auxiliary Pump Station will only be operated during conditions that require use of more than the normal operating volume of water in the Standpipe.

Table 8-1. Intermediate Standpipe Components

Component	Description
Intermediate Standpipe	4 MG standpipe. Capacity of storage tank sized to provide operational flexibility in the western half of the water transmission system.
Auxiliary Pump Station	4 MGD auxiliary pump station to be used to pump water from the lower portion of the standpipe into the RWC transmission system.

Key:
MG = million gallons
MGD = million gallons per day

8.2 Key Design Considerations

8.2.1 Design Flow and Capacity

The Intermediate Standpipe will be sized at 4 MG and provide system storage to stabilize pressures in the portion of the RWC transmission main downstream of the Intermediate Pump Station. The standpipe will be designed to "float" on the transmission main hydraulic grade line

to help accommodate changes in flow patterns and regulate pressure upstream of the RWC Member water delivery points. Current hydraulic analyses indicate that a standpipe with a 140-foot high operating range would meet these conditions. However, the final operating elevation for the Intermediate Standpipe will be determined based on hydraulic analyses performed once RWC Members indicate their preliminary declaration of 2050 Declared Maximum Day Demand.

The Auxiliary Pump Station will be sized to allow the full volume of the Standpipe to be pumped into the RWC system within a 24-hour period if necessary.

8.2.2 Fundamental Design Principles

Fundamental design principles for the Intermediate Standpipe are similar to those for the standpipe to be constructed adjacent to the Intermediate Pump Station as presented in Section 7. In both cases, it is anticipated that the standpipe will be constructed of welded steel and will include separate inlet and outlet piping to facilitate turnover of the stored water. The water level in the standpipe will be monitored via a pressure transducer in the adjacent piping and monitored via the RWC Supervisory Control and Data Acquisition (SCADA) system.

Piping and valving will be designed to allow the Standpipe to be isolated from the transmission main and used as the water supply for the Auxiliary Pump Station, if necessary.

Select design criteria for the Intermediate Standpipe are summarized in Table 8-2. Design Criteria for the Auxiliary Pump Station are summarized in Table 8-3. These criteria are subject to change based on permitting conditions, local building requirements, land acquisition considerations, site constraints, and final hydraulic analysis results.

Table 8-2. Key Design Criteria: Intermediate Standpipe

Design Parameter	Design Parameter Value
Design Capacity (MG)	4.0 (Subject to change based on final demands and hydraulics)
Design Overflow Elevation (ft)	810 feet above mean sea level*
Approx. Ground Elevation (ft)	670 feet above mean sea level*
Height to Overflow (ft)	140*
Material of Construction	Welded Steel

Notes:
* All elevations are dependent upon final system hydraulics and will be refined after the 2050 Maximum Day Demand is determined.

Key:
MG = million gallons

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering of the proposed Intermediate Standpipe and Auxiliary Pump Station Facility. The RWC will finance, own, operate, and maintain the Intermediate Standpipe and Auxiliary Pump Station.

Table 8-3. Key Design Criteria: Auxiliary Pump Station

Design Parameter	Design Parameter Value
Design Capacity – Pump Station (MGD)	4.0
Design Head (feet)	140 (to be confirmed based on final hydraulics)
Pump Type	Horizontal Split Case
Motor Control	Constant Speed
No. of Pumps, Pump Redundancy	3, N+1
Pump Capacity (MGD)	2
Piping and Valve Velocity (fps)	3 to 5 (Suction), 5 to 8 (Discharge)
Chemical Feed	Room for potential Sodium Hypochlorite feed and chlorine analyzer
Electrical Equipment	480 V
Primary Power Supply	New electrical service
Backup Power	Generator with Automatic Transfer Switch sized to operate one pump
SCADA Architecture (for Commission)	PLC-based control w/ gigabit fiber optic ethernet network
SCADA Local Interface	Yes
Security Provisions	Real-time video surveillance and access control w/ local server
Restroom	No
Building Materials	
Foundation	Cast-in-place Concrete
Exterior Walls	CMU Block w/ Masonry Brick
Interior Walls	Glazed CMU Block
Roof System	Flexicore Panels
Interior Ceilings – General	Exposed Roofing System
Interior Ceilings – SCADA Room	Suspended Tile

Key:
ATS = Automatic Transfer Switch
CMU = Concrete Masonry Unit
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9 Regional Delivery Point Basis of Design

9.1 Proposed Capital Improvement

Regardless of which municipalities in the surrounding area join Joliet to create the Regional Water Commission, infrastructure will be needed to allow the RWC to properly deliver Lake Michigan water to its members via delivery/metering stations at each RWC Member water delivery point. Standardized water delivery structure criteria for controlling and metering flow at each member community's water delivery sites are described in the following section.

9.1.1 Improvement Function

As previously discussed, the RWC will draw water from Chicago at a generally uniform rate over a 24-hour period. Therefore, it is important for the RWC to coordinate the rate at which water is being drawn from its system by members. This will be accomplished by requiring each member to grant permanent and temporary easements (at no cost) for an RWC-operated standard delivery/metering station at each water delivery point. The function of a standardized delivery/metering station is to offer the RWC consistency and simplify operation and maintenance.

RWC Members will be permitted to take water at a uniform flow rate that is set by the RWC in consultation with the member. The members' take rate would be held steady at the requested amount by a flow control valve within the delivery/metering station unless an emergency situation, such as a main break or fire event, warrants a take rate adjustment. Members may call the RWC on a daily basis to request take rate adjustment, if necessary. Members will be responsible for determining the necessary take rate adjustments for their own systems by using operating judgment and looking at previous day flow rates and tower levels. For operation with a constant supply rate, peak demands will need to be met from each individual member's internal storage. It is anticipated there will be enough storage volume within the Members' systems to accommodate demand fluctuations due to the minimum storage requirements imposed on all RWC members (local storage equal to two times the Member's IDNR allocation).

Depending on each individual RWC Member system configuration and demands, it may be beneficial for some members to have more than one water delivery point. In some cases, member communities may also want more than one water delivery point to distribute the water supply across their system.

As described in Section 1, the plan for the RWC system is based on an "All-for-One" approach. Taking this same approach for water delivery points, the division of responsibility for the construction and operation of these water delivery/metering stations is as follows:

- Costs associated with the construction of transmission piping and standard (vault-style) delivery structure infrastructure to support one primary delivery point for each RWC Member will be included in the cost of the overall RWC system.
- All costs associated with additional delivery points (beyond the primary delivery point) requested by an RWC Member, including the water delivery/metering station and the main leading up to it from the primary RWC transmission main, will be paid by the

Member even though all infrastructure will be designed by the Program Team and constructed, owned, operated, and maintained by the RWC.

While pressure at individual water delivery points may be greater, RWC Members are only guaranteed a minimum delivery pressure of 25 psi. Members may desire to utilize the energy of the delivered water, but all members should make provisions for pressure boosting within their own distribution systems.

9.1.2 Improvement Components

It has been assumed that the delivery/metering facilities will be within a cast-in-place concrete vault. Entry to the station would be via a hatch at grade with steps to the lower level. Consideration of above ground metering stations and the associated increase to capital costs and maintenance costs will be evaluated by Commission Members.

The delivery/metering stations will need to be climate-controlled through the use of unit heaters, ventilation, dehumidification, and a sump pump. Stations will also have SCADA and telemetry components so that the equipment, including the flow control valves, meters, and pressure transmitters may be continuously monitored and remotely controlled. SCADA system information will need to be available for RWC's control and observation and for member observation.

9.2 Key Design Considerations

A standardized water delivery structure will need the capability to meter and control flow for a wide range of demands at the various RWC Member water delivery points. For example, a summary of the anticipated flows at one Regional Scenario 11 water delivery point is included in Table 9-1 below. Once the final set of RWC Members has been determined, data sheets summarizing design flows and anticipated delivery pressures will be developed for each water delivery point.

Table 9-1. Scenario 11 Example Water Delivery Point Flows

	Minimum Flow	Average Flow	Maximum Flow
2030 Delivered Flow (gpm)	715	1,335	3,090
2050 Delivered Flow (gpm)	1,050	1,670	4,335
Build-out Delivered Flow (gpm)	2,050	2,430	7,225

Key:
gpm = gallons per minute

9.2.1 Design Flow and Capacity

Given the wide range of flows to be accommodated at RWC Member water delivery points and the relatively limited capacity of most flow control valves, it is anticipated that the standard delivery structure will need to utilize two parallel lines to support design flows through 2050.

Parallel lines will also allow delivered flow to remain metered during maintenance of meters and flow control valves in the parallel line.

Within the structure, room for a third line could also be included to accommodate demands beyond 2050, if necessary. In some cases, RWC members anticipate significant build-out growth, and therefore, may need to add additional water delivery points in the future.

9.2.2 Fundamental Design Principles

Exhibit 9-1 below shows preliminary plan and section views for a typical RWC water delivery/metering station respectively. This exhibit shows the below-grade structure with an access hatch and stairs leading to the lower level.

The standardized delivery/metering station would include a flow control valve, meter (with a means of in situ calibration of the meters), and pressure transmitter. A single pressure relief valve may be used between the parallel lines to release pressure surges in the RWC system.

Head loss, lay length, accuracy, allowable flow ranges, and maintenance will need to be considered for equipment selection during final design. Flow control valve options include hydraulically actuated diaphragm style, such as Cla-Val or OCV, and electrically actuated ball valve style. Common flow meter options include venturi, propeller and electromagnetic (mag) meters. Due to the smaller diameter piping anticipated in the water delivery/metering stations, electromagnetic flow meters are proposed for this application. Electromagnetic flow meters are capable of operating within acceptable levels of accuracy (0.18% to 0.5%) over a large flow range, allowing many stations to not need meter replacement or additional lines added to their delivery structure prior to 2050. The RWC will need to perform annual or semi-annual calibration or multi point verification to maintain meter accuracy.

Joliet, as Program Manager on behalf of the RWC, will be responsible for the design and construction engineering of the proposed water delivery/metering stations. The RWC will construct, finance, own, operate, and maintain the water delivery/metering stations.

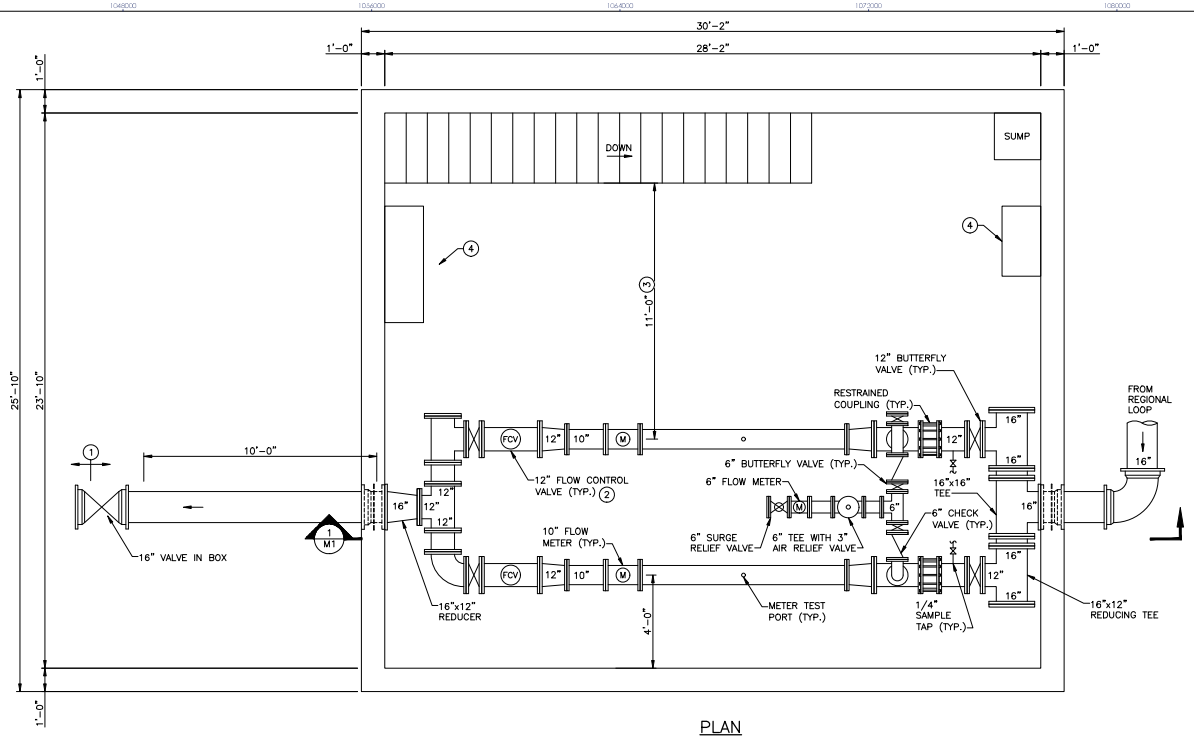

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EXHIBIT 9-1

Title

Typical Water Delivery/Metering Station

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location
Will, Cook, DuPage, Kendall, Grundy, and LaSalle County, IL.

Prepared by MR & MB on 2019-08-09
TR by NJS on 2019-09-03
IR Review by TJJ on

Key Notes

1. BOUNDARY BETWEEN RWC AND MEMBER COMMUNITY OWNERSHIP.
2. BUILT-IN CHECK FEATURE INCLUDED.
3. AREA LEFT OPEN FOR COMMUNITIES WITH SIGNIFICANT BUILD-OUT DEMANDS. CAN BE REMOVED FOR SMALLER COMMUNITIES.
4. SCADA AND TELEMETRY EQUIPMENT.

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10 Commission Office and System-wide SCADA/Communications (CIP #5) Basis of Design

10.1 Proposed Capital Improvement

10.1.1 Improvement Function

For the purpose of the current basis of design, it is assumed that a new office will be required to serve as the headquarters and operational center for the RWC. In addition to providing space for offices, a conference room, and reception area, it is assumed that this facility would house the operations center for the regional water transmission system and serve as the hub for the System-wide SCADA and Communications infrastructure.

System-wide Communications and SCADA are required to establish communications between and provide for control and monitoring of the physical facilities (e.g., pump stations, storage facilities, transmission main, delivery structures) that make up the RWC water system. The System-wide SCADA/Communication system will allow processes and facilities to be automatically controlled and remotely monitored. The SCADA system will also support real time video surveillance and centralized access control at each facility.

10.1.2 Improvement Components

Details of the proposed Commission Office are difficult to define until the number of members and overall system size have been determined. However, for the purpose of initial costing it is assumed that approximately 4,000 square feet of space would need to be provided. This space could be provided at another proposed RWC facility, or as a stand-alone office. An allowance of $1.25 million (which includes a 25% construction contingency) is included in the current cost estimates for this office space.

The SCADA/Communications system will utilize industrial Ethernet switches at each of the major physical facilities (e.g., Low Service Pump Station, High Service Pump Station, Intermediate Pump Station, Intermediate Standpipe, and a central control facility) that are connected together via single mode fiber optic cable as shown in Exhibit 10-1. The fiber optic cable will be installed parallel to the RWC transmission main. Access handholes/manholes for the fiber optic cable will be provided at approximately 1,000-foot intervals along the cable route, at major road crossings, and at each crossing of the Calumet Sag Channel or the Des Plaines River/Chicago Sanitary and Ship Canal.

The switches and associated equipment will be installed in dedicated racks located in dedicated controlled access network rooms. Uninterruptible power supplies will provide power to allow the network equipment to continue to operate for at least 12 hours in the absence of utility power.

A backup communication system utilizing some form of wireless communication (e.g., dedicated high speed radios, cellular modems) will be provided to support communication in the event the fiber optic cable between the sites is damaged or rendered inoperable.

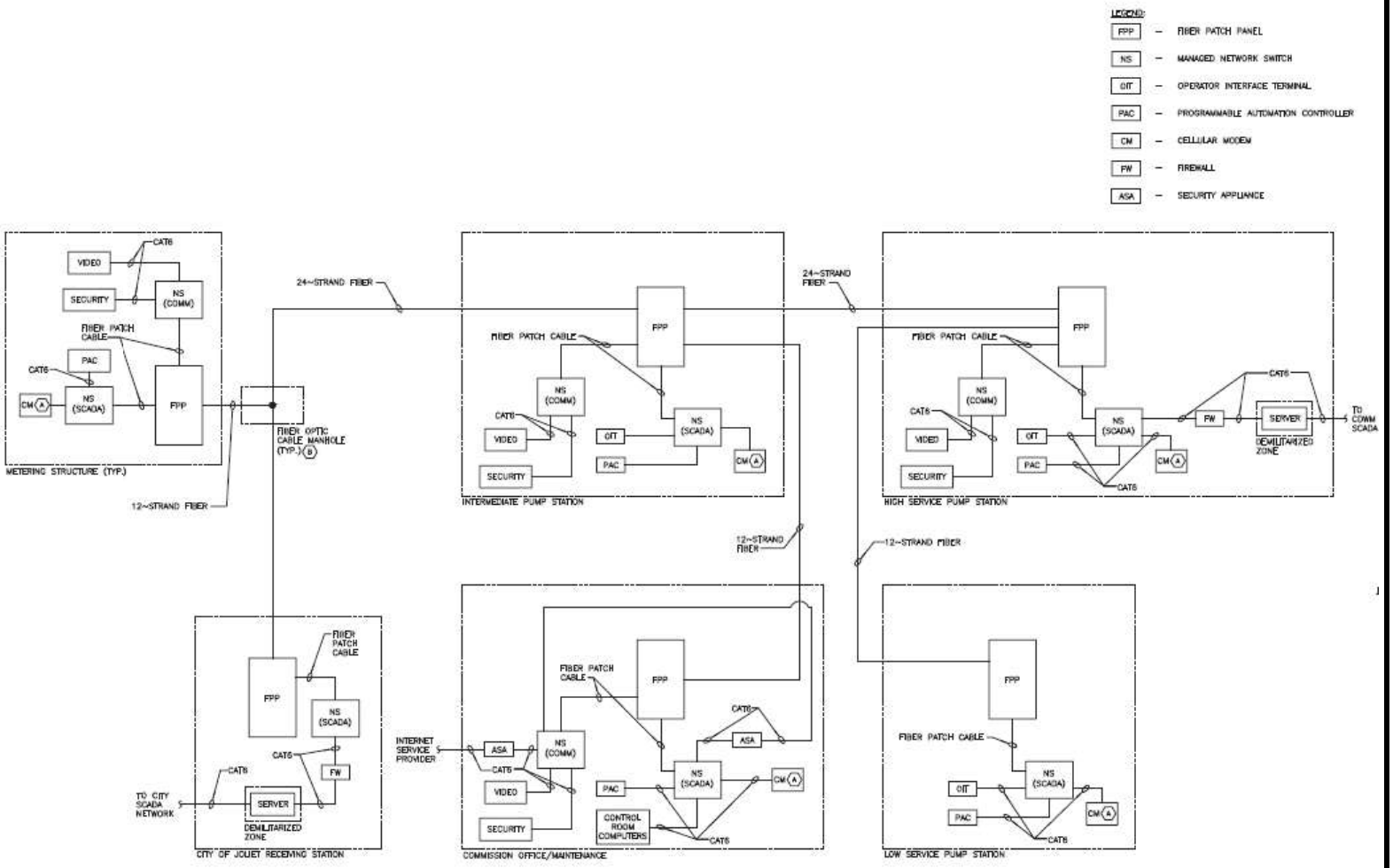

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EXHIBIT 10-1

Title

Conceptual SCADA Network Architecture

Client/Project

City of Joliet Department of Public Utilities
Alternative Water Source Program

Project Location

Will, Cook, DuPage, Kendall, Grundy, and LaSalle County, IL.

Sheet Notes

1. PULL POINTS FOR FIBER CABLES PROVIDED EVERY 1,000 FEET ALONG FIBER ROUTE.
2. CELLULAR MODEM FOR BACKUP COMMUNICATION.
3. 6-STRANDS OF 12-STRAND FIBER SPLICED TO 6-STRANDS OF 24-FIBER FOR EACH METERING STATION TO CREATE CONTINUOUS LOOP FOR BOTH SCADA AND COMMISSION FIBERS.
4. CONNECTION TO THE COMMISSION NETWORK IS FOR REMOTE ACCESS.

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11 Program Implementation Strategies

11.1 Program Level Strategies

11.1.1 Sustainability and Resiliency Strategy

In support of the overall mission of the AWSP, the Program Team has drawn upon principles from the Institute for Sustainable Infrastructure's Envision Framework[3] and crafted a strategy for sustainable and resilient design. The Envision framework encourages changes in the planning, design, and delivery of projects to create more sustainable, resilient, and equitable infrastructure. For the AWSP, the Program Team has adopted specific sustainability and resiliency priorities from all five categories included in the Envision framework as listed below. These priorities will be used by the Program Team throughout AWSP implementation to maintain a focus on sustainability and resiliency.

Quality of Life

Advancing Equity and Social Justice – Ensure that equity and social justice are fundamental considerations within project process and decision making through stakeholder engagement and discussion among Program Team members.

Minimize Construction Impacts – Identify and manage the temporary impacts of construction on adjacent neighborhoods and properties at Program sites through outreach and coordination during design, as well as incorporation of impact mitigation measures into construction documents.

Leadership

Provide for Stakeholder Involvement – Develop, monitor, and refine plans for early and sustained stakeholder engagement and involvement in project decision making.

Foster Collaboration and Teamwork – Schedule and conduct regular meetings to promote early and consistent collaboration between designers, contractors, operators, and Regional Water Commission members. Drive focus on the common goal of Program delivery by 2030.

Resource Allocation

Reduce Operational Energy Consumption – Incorporate measures for managing energy usage at AWSP facilities into project designs. When the project is complete, energy use will likely be the largest recurring cost of operation for the water system. Reducing energy usage may be the best way to reduce the long-term cost of operation of the system.

Preserve Water Resources – Reduce regional use of the deep aquifer and plan for the efficient use of the new Lake Michigan source through promotion of best practices for water loss management and water conservation. Water quality and availability are a concern across the US and around the world. Increased usage, limited ground water recharge,

[3] *Envision Sustainable Infrastructure Framework. Version 3.* Institute for Sustainable Infrastructure. 2018. https://sustainableinfrastructure.org/wp-content/uploads/EnvisionV3.9.7.2018.pdf

and variability in the hydrologic cycle present significant challenges for many communities.

Resource Allocation (continued)

Commission and Monitor Energy Systems – Prepare standard guidelines and design details for monitoring energy use at AWSP facilities after they are constructed. Monitoring the system is important for maintaining operational efficiency over the life of the project. Commissioning provides assurance that the system is functioning as intended at startup, while monitoring equipment and software allows operators to identify and isolate issues to maintain that energy efficiency over the life of the project.

Reduce Operational Water Consumption – Perform annual reviews of non-revenue water and customer water use trends to confirm that water is being used efficiently. Decreasing non-revenue water and reducing overall water consumption means less water treated and pumped, and more water for future generations.

Monitor Water Systems – Perform regular reviews of water system performance (water loss audits, reviews of power usage, pressure variation tracking, etc.) to monitor/identify changes in performance. Similar to the benefits of monitoring energy usage, monitoring flow and usage of water and detecting leaks early can save money in operations, reduce non-revenue water, and decrease energy consumption associated with treatment and pumping.

Natural World

Managing Stormwater – Minimize the impact of project improvements on stormwater runoff quantity, rate, and quality. Identify opportunities for incorporating stormwater best management practices into site designs for individual AWSP projects.

Preserve Sites of High Ecological Value – Implement National Environmental Policy Act (NEPA) guidelines and requirements including the mitigation hierarchy of Avoidance, Minimization, Protection, and Offsetting.

Climate and Resilience

Evaluate Risk and Resilience – Conduct and review regularly a comprehensive risk evaluation to understand potential hazards or threats to program success. Risk is a factor of the probability of a threat/hazard occurrence, the potential impact on the Program, and the associated consequence of failure.

Improve Infrastructure Integration – Enhance the operational relationships and strengthen the functional integration of the project into connected, efficient, and diverse infrastructure systems.

The AWSP is a multi-faceted effort with multiple design teams. This strategy for sustainable and resilient design is intended to facilitate and provide a consistent framework for incorporating sustainability and resiliency into the planning, design, construction, and operation of the required infrastructure improvements. A summary of the *Sustainable and Resilient Design*

Strategy for the Alternative Water Source Program is available on the RethinkWaterJoliet.org website at: *Strategy for Sustainable and Resilient Design*

11.1.2 Local and Disadvantaged Business Enterprise Engagement Strategy

The AWSP represents one of the largest single investments in public infrastructure undertaken within the Southwest Suburbs. In addition to providing the region with a reliable, long-term source of high-quality drinking water, the AWSP will create significant economic opportunity for businesses in the construction, technical, and financial sectors.

Given the importance of the AWSP to the region, it is recognized that the program must include a well-defined strategy for the effective engagement of local and Disadvantaged Business Enterprises (DBE) during final design and construction of the AWSP improvements. Engagement of local and DBE firms in the Program will benefit the region through:

- the injection of capital investment dollars into key sectors in the regional economy providing return on that investment in terms of economic and workforce development,
- the participation of entities with diverse backgrounds, perspectives, and capabilities in the analysis of challenges and effective delivery of the Program, and
- compliance with participation criteria used by state and federal agencies in evaluating programs for grant and/or low interest loan programs.

Specific elements of the proposed Local and DBE Engagement strategy are tailored to the phases of the Program and structured to achieve compliance with requirements for external funding programs including Water Infrastructure Finance and Innovation Act (WIFIA) and the State Revolving Fund Loan Program. Currently, WIFIA does not set quantitative metrics for DBE involvement; rather, WIFIA loan recipients must demonstrate compliance with USEPA's Six Good Faith Efforts.[4] DBE engagement goals used by the Illinois Environmental Protection Agency for the State Revolving Fund Loan Program are currently 5% Minority Business Enterprise (MBE), 12% Women Business Enterprise (WBE). The City of Chicago has also indicated that work done for facilities that it will own may have to comply with its requirements for MBE, WBE, and Veteran Business Enterprise (VBE) engagement. Discussions regarding the applicability of City of Chicago procurement regulations to projects included in the AWSP are ongoing.

Outreach to local and DBE firms is in progress for support of current preliminary engineering activities including the performance of geotechnical investigations, property appraisals, and public outreach support. As the elements of the Program move into final design, engagement of local and DBE firms will be increased through outreach and release of requests for qualifications for engineering and support services.

[4] https://19january2017snapshot.epa.gov/sites/production/files/2013-09/documents/good_faith_efforts.pdf

Detailed plans for continued local and DBE firm engagement efforts during the multi-year construction phase of the AWSP will be developed as the overall schedule for bidding, award, and construction of individual work packages is defined. Activities that are anticipated to be essential to the success of this effort include:

- active engagement of local and DBE subconsultants and subcontractors as members of the Program Team providing support of overall program management and construction management activities.
- early, clear, and ongoing communication of information related to the scope and schedule for bid packages to the general and local/DBE contracting communities.
- monitoring, assessment, and refinement of bidding and contract documents especially as they relate to engagement of local and DBE firms.
- regular monitoring and reporting of local and DBE involvement in AWSP projects and the overall Program through quarterly newsletters.
- recognition of local and DBE firms that successfully complete key program assignments as prime contractors or major subcontractors.